PROPOSED
LIVESTOCK GRAZING MANAGEMENT

for the

BENTON-
OWENS VALLEY
PLANNING UNIT

Draft Environmental Impact Statement

United States Department of the Interior
Bureau of Land Management
California

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
800 Truxtun Avenue, Room 302
Bakersfield, California 93301
Phone: (805) 861-4191
Office hours: 7:30 a.m. to 4:00 p.m. weekdays

Dear Reader:

Enclosed for your review and comment is the draft environmental impact statement on Proposed Grazing Management for the Bureau of Land Management's Benton/Owens Valley Planning Units in Inyo and Mono Counties California.

Four grazing management alternatives are considered:

Alternative 1 (No Action). Livestock use would remain at 21,010 AUMs. Range management program frozen.

Alternative 2 (Proposed Action). Recommended number of AUMs allocated to livestock under this alternative is 18,462; an additional 3,154 AUMs are divided among wild horses, deer, and elk.

Alternative 3 (Stocking by Condition Class). This alternative would set the stocking levels for livestock in relation to the average ecological conditions class of an allotment. Maximum total livestock use would be 11,894 AUMs. Wildlife and wild horses would be allocated a total of 3,154 AUMs.

Alternative 4 (No Livestock Grazing). Under this alternative, all forage would be allocated to wildlife, wild horses, and non-consumptive uses such as watershed.

In addition to addressing different allocation levels, the EIS considers implementation of various management systems plus a variety of management facilities and treatments, such as water developments and fencing, as well as a series of monitoring programs to ensure the viability of our grazing management.

The impacts of grazing management on the other resources of the area vary according to the alternative being considered. Under the Proposed Action (the Preferred Alternative) grazing levels would be adjusted to the carrying capacity of the range, a 12 percent reduction from the existing level. This allocation reduction plus the range facilities and vegetation treatments proposed would result in the improvement of 79,797 acres to a "good" ecological range condition within 25 years. A total of 153,941 acres are predicted to advance to the "good" class in 25 years under the Stocking by Condition Class alternative; 180,157 acres under the No Grazing Alternative, and 11,455 acres under the No Action alternative.

Please review this document and send your comments to:

District Manager
Bureau of Land Management
800 Truxtun Avenue
Room 302
Bakersfield, California 93301
Telephone: (805) 861-4191

For further information, contact Ken Volpe at the above address and telephone number. The specialists who prepared the various components of this EIS are listed in Appendix "A" and may be contacted for resource specific information through Mr. Volpe.

Please submit your written comments no later than JAN 2 6 1981 so that they can be considered during the preparation of the final EIS.

A list of the agencies, organizations and individuals to whom copies of this draft are being sent can be found on page .

Sincerely,

/s/ LOUIS A. BOLL

Louis A. Boll
District Manager

Enclosure

DEPARTMENT OF THE INTERIOR

BENTON/OWENS VALLEY
DRAFT
ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY

BUREAU OF LAND MANAGEMENT

DEPARTMENT OF THE INTERIOR

STATE DIRECTOR, CALIFORNIA STATE OFFICE

SUMMARY

SUMMARY

INTRODUCTION

The draft environmental impact statement on proposed livestock grazing management for the Benton/Owens Valley Planning Units analyzes the effects of implementing each of four alternative livestock management plans on the various resources on 542,000 acres of public land near Bishop, California. Each alternative addresses various levels of livestock use, management, range facilities, and vegetation treatments.

The major issues confronting BLM in the management of grazing on these lands are the potential impacts on lands under wilderness review; the 73,449 acres in a "poor" ecological condition class; and impacts on wildlife resources, particularly mule deer, tule elk, and sage grouse.

GRAZING MANAGEMENT ALTERNATIVES

Alternative 1-- Continue Present Management (No Action)

Livestock licensed use would continue at 21,010 AUMs in 45 allotments. Existing range facilities and practices would be maintained but new facilities, etc., would not be developed. There would be no allocation of vegetation to wildlife.

Adoption of this alternative would, for the most part, result in negligible changes in impacts on the area's resources. Impacts from grazing on air quality, soils, wild horses, and social-economic conditions would be expected to continue to be minimal. Continuation of serious adverse impacts on certain streams and deer herds would be expected. The present impacts on vegetation would continue, however, with a slight increase in forage production and improvement in ecological conditions resulting from natural succession on previously treated areas. These successional processes would have minor beneficial effects on visual, recreational, and wilderness values.

Alternative 2-- Proposed Action

A total of 18,462 AUMs of forage would be allocated to livestock, 187 AUMs to wild horses, and 2,967 AUMs to mule deer and tule elk.

Eight allotments would be intensively managed under allotment management plans (AMPs), either through rest-rotation or deferred-rotation grazing. Forty-one allotments would be less intensively managed. Acreage adjustments would be made on 28 allotments, grazing use adjustments on 42 allotments, and seasons of use changes on 35 allotments.

Approximately 147 additional miles of fence and 60 new water developments would be constructed. Chemical brush control is proposed on 7,360 acres, prescribed burning on 29,000 acres, and seeding on 14,720 acres. The development and implementation of all projects will adhere to the appropriate design restrictions developed to protect the environment.

Several monitoring programs would be carried out to insure the effectiveness of grazing management.

Overall long-term beneficial effects on the environment through adoption of this alternative would result primarily from: (1) the 12-percent reduction in forage allocation, which would bring all but one allotment (Wells Meadow) into carrying-capacity stocking levels; and (2) the various facilities, which would better control and distribute livestock grazing. Almost 80,000 acres would improve in ecological condition and forage production is expected to increase by 26 percent over a 25-year period.

Minor adverse impacts are expected in air quality, soil runoff, and wind erosion from the proposed 29,000 acres of prescribed burning. Vegetation treatments proposed in Wildernees Study Areas CA-010-057, CA-010-058, CA-010-064, and CA-010-090 would violate the Interim Management Policy guidelines and would be prohibited until Congress decides on these areas. These treatments would also have low to moderate negative impacts on cultural, wildlife, recreational, and visual resource values.

Construction of various range facilities could negatively impact cultural, visual resources, recreational, wild horse, and wilderness values while positively affecting water quality, stream-channel stability, wildlife, and vegetation.

The 12-percent reduction would benefit all natural resources but would also adversely affect one part-time and one small cattle operator. There would be a regional initial loss of $80,000 in livestock sales. By the year 2005, increases in carrying capacity would add about $80,000 in annual sales of meat and wool.

Seasons of use proposed under this alternative have been identified as serious negatively impacting management elements on the water resources and wildlife. Spring-summer grazing would result in livestock concentrations and subsequent degradation of riparian and aquatic habitat and could result in significant forage and space competition between livestock and wildlife.

Alternative 3-- Stocking by Condition Class

This alternative would set the level of livestock use in any allotment according to the average ecological condition class. A total of 11,894 AUMs would be allocated to livestock, 187 to wild horses, and 2,967 to deer and elk. Grazing on Black Rock and Wilfred Creek Allotments would be deferred five years due to a "poor" condition class. All other aspects of grazing management would be as for the Proposed Action, except that up to 150 miles of additional fence have to be constructed to separate allotments jointly managed with the U.S. Forest Service and the City of Los Angeles.

The impacts on the environment from vegetation treatments and range facility construction would be identical to those due to the Proposed Action with one major exception: the potential construction of an additional 150 miles of fence could negatively affect both cultural artifacts and wild ungulate movement and migratory patterns.

An overall reduction in AUM allocation of 43 percent would positively affect all natural resources. Almost 154,000 acres are expected to improve in ecological condition by the year 2005 with a concomitant increase in forage production of 41

percent over the present production. Four cattle operators and one sheep operator would be substantially negatively affected initially. However as productivity increases their losses would be reduced and by the year 2005 the annual sales of meat and wool would be up to about $100,000 from current levels.

Alternative 4-- No Livestock Grazing

All livestock grazing permits and agreements would be cancelled. Approximately 200 miles of fence might have to be constructed to prevent livestock trespass.

Adoption of this alternative would be highly beneficial to most natural resources, particularly, soils, water, vegetation, wildlife, cultural, visual resources, etc. There would be minor detrimental impacts on cultural resources and on a few wildlife species, e.g., deer and elk, from the possible construction of up to 200 miles of boundary fences. Wildlife species favoring early successional stages of vegetation would gradually be replaced through natural succession. Regionally there would be a permanent loss of approximately $410,000 annually. Nine cattle operators, one sheep operator, and one combination operator would be substantially negetively affected.

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ALTERNATIVES, INCLUDING THE PROPOSED ACTION

CHAPTER 1
ALTERNATIVES, INCLUDING THE PROPOSED ACTION

The Bureau of Land Management (BLM) proposes a grazing management program affecting 542,000 acres of public land and 120,000 acres of land in the other ownership categories on 45 allotments near Bishop, California (Map 1-1). Public lands in this area are administered by the Bishop Resource Area, Bakersfield District, of the BLM. They are adjacent to or interspersed with lands managed primarily by the U.S. Forest Service or the City of Los Angeles.

PURPOSE OF AND NEED FOR ACTION

The purpose of the proposed grazing management is to manage the resources (soil, water, vegetation, wildlife, livestock, etc.) of the Benton/Owens Valley Planning Units within a multiple-use framework, as mandated by various laws (Taylor Grazing Act, 1934; National Environmental Policy Act, 1969; Federal Land Policy and Management Act, 1976; Endangered Species Act, 1977; Public Range Lands Improvement Act, 1978). The objective is to maintain or improve the condition of public land resources through grazing management. This environmental impact statement identifies and analyzes the impacts of four alternatives on the natural environment and provides mitigating measures to reduce or eliminate adverse impacts.

The major issues, or multiple-use conflicts, existing in this area include forage competition between livestock, mule deer, and tule elk; "poor" ecological condition of approximately 73,449 acres of public lands; and potential impacts on wilderness characteristics of lands under wilderness review.

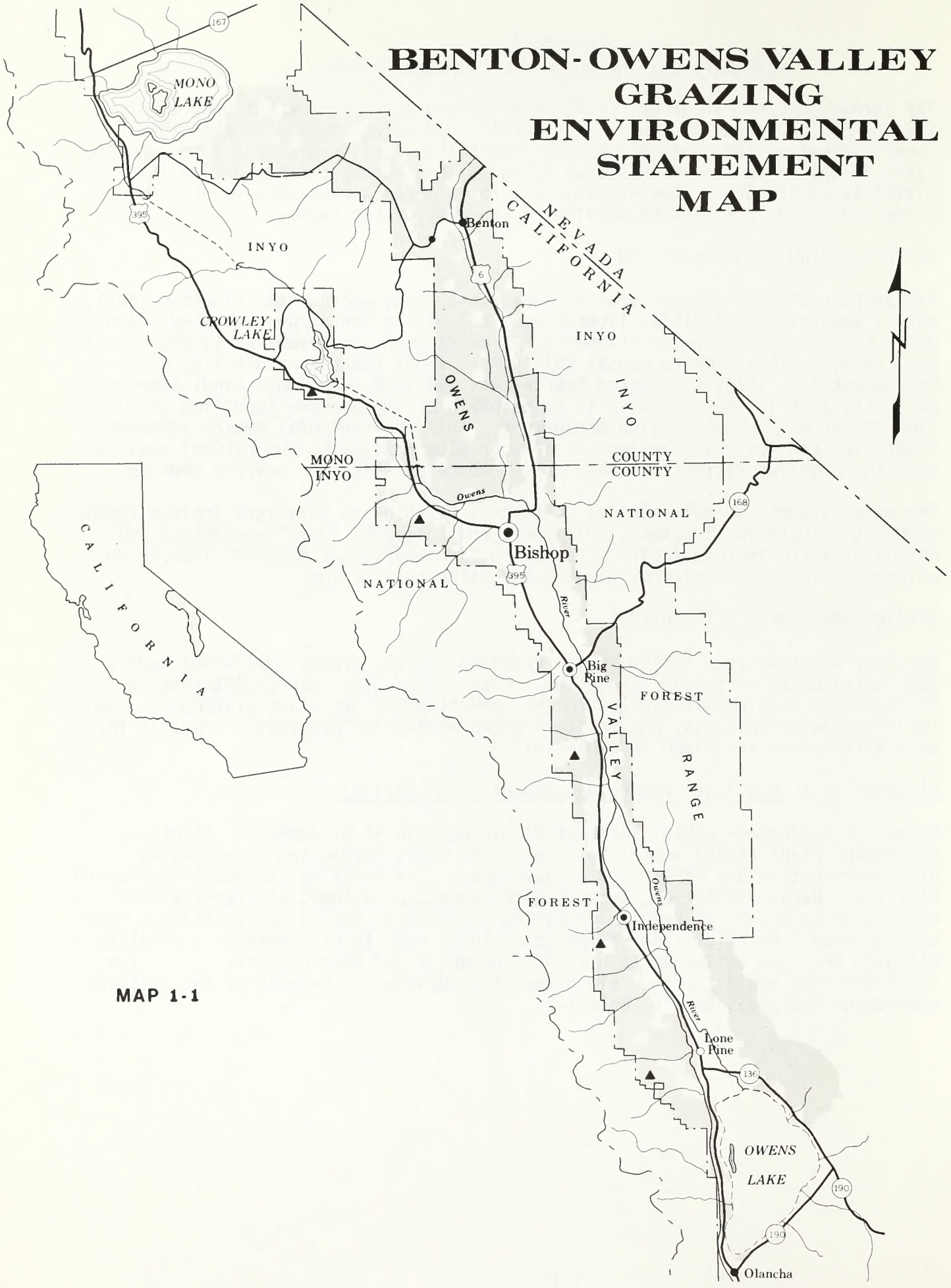
GRAZING MANAGEMENT ALTERNATIVES

The four alternatives, including the Proposed Action, present different levels and distribution of forage allocation. Each alternative (except Alternative 4, No Livestock Grazing) is subject to the same standard operating procedures, range facility design criteria, and monitoring and evaluation processes. Details for each alternative are given in Table 1-1.

Alternative 1- Continue Present Management - (No Action)

Livestock preference would remain at 21,010 AUMs in 45 allotments. Allotment management plans (AMPs) would continue on the Wells Meadow and Adobe Valley Allotments but no new AMPs would be developed. The existing seasons of use would continue. Range facilities, such as water tanks, pipelines, and fences, would be maintained as a part of regular operating procedures, but no new facilities would be developed. No allocation of forage would be made to wild horses or wildlife although they are estimated to use 187 AUMs and 2,967 AUMs respectively. Livestock trailing would continue along the stock driveway. Details of the existing management are presented in Table 1-2.

BENTON-OWENS VALLEY GRAZING ENVIRONMENTAL STATEMENT MAP



MAP 1-1

TABLE 1—1
LIVESTOCK GRAZING SUMMARY OF ALTERNATIVES

Grazing System and Allotment	ID No.	AUM'S ESTIMATED 1/ CARRYING CAPACITY: Livestock	Wildlife	6/ Season of Use	Kind of 4/ Livestock	FORAGE ALLOCATION: Alt. 1 No Action Livestock	Alt. 2 Proposed Action: Livestock	Deer	2/ Elk	Wild Horse	Other	Alt. 3 Stock by Cond. Class: Livestock	Deer	Elk	Wild Horse	Other	Alt. 4 No Grazing: Livestock	Deer	Elk	Wild Horse	Other	INITIAL LIVESTOCK 3/ AUM ADJUSTMENTS: Alt. 1	Alt. 2	Alt. 3	8/ Alt. 4
INTENSIVE MANAGEMENT — REST ROTATION																									
Round Valley	6008	405	449	06/01 - 10/15	C	244	389	449	-	-	0	234	449	-	-	155	0	449	-	-	389	0	+145	-10	-244
Marble Creek	6025	892	349	Year long	C	741	878	200			149	527	200			351	0	200			878	0	+137	-214	-741
Adobe Valley (Implemented)	6027	1736	32	06/15 - 11/15	C or S	1241	1636	2		98	0	1311	2		98	325	0	2		98	1666	0	+395	+70	-1241
Sherwin	6032	135	110	06/01 - 10/15	C	45	97	110				59	110			76	0	110			135	0	+52	+14	-45
Wells Meadow (Implemented)	6051	69	65	04/01 - 10/15	C	152	149	65			0	90	65				0	65			69	0	-3	-62	-152
Ash Creek	6042	276		02/01 - 05/31	C	300	276				0	166				114	0				276	0	-24	-134	-300
INTENSIVE MANAGEMENT - DEFERRED ROTATION																									
Independence	6014	407	357	04/01 - 06/30	C	420	406	59	60		238	244	59	60		400	0	59	60		644	0	-14	-176	-420
Alabama Hills	6046	1109	537	02/01 - 05/31	C	1181	1077	80	60		329	647	80	60		879	0	80	60		1526	0	-104	-534	-1181
LESS INTENSIVE MANAGEMENT — SEASON RESTRICTION																									
Black Lake Unalloted	0003	243		07/15 - 11/14	C or S	0	223			20	0	134			20	89	0			20	223	0	+223	+134	0
Fish Slough*	0004	45		11/01 - 05/31	C	0	39				4	24				21	0				45	0	+39	+24	0
Volcanic Table Lands	6007	1341	100	05/01 - 06/15	S	4456	1332	15			0	800	15			532	0	15			1332	0	-3124	-3656	-4456
West Crater Mt.	6019	331	49	12/01 - 06/30	C	300	331	45			4	199	45			136	0	45			334	0	+31	-101	-300
Shannon Canyon/ Baker Creek	6021	125	97	04/01 - 06/20 10/01 - 12/31	C	24	125	97				75	97				0	97			121	0	+101	+51	-24
Wilfred Creek*	6022	253		06/01 - 11/30	C	315	253				0	0 5/				253	0				253	0	-62	-315	-315
Hammil Valley	6024	2004	518	06/16 - 02/28	C	1950	1964	271			247	1179	271			1032	0	271			2211	0	+14	-771	-1950
Mathieu	6026	50		06/01 - 10/31	C or S	50	50				0	50				0	0				50	0	0	0	-50
Black Lake	6028	24		06/01 - 10/31	C or S	49	24				0	15				9	0				24	0	-25	-34	-49
Chalfant Valley	6030	399		10/01 - 05/15	C	870	399				0	240				159	0				399	0	-471	-630	-870
Granite Mtn.	6034	832	48	07/01 - 10/05	C or S	492	798	48				798	48		0		0	48			798	0	+306	+306	-492
Adobe Lake	6036	98		06/01 - 10/31	C or S	112	77			19	2	47			19	32	0			19	79	0	-35	-65	-112
Symons	6037	93		06/01-10/31	C or S	144	93				0	93				0	0				93	0	-51	-51	-144
Bramlette*	6038	800	474	10/01 - 02/28	C	1032	738	159		50	315	443	159		50	610	0	159		50	1053	0	-294	-589	-1032
Laws	6040	56		10/01 - 05/15	C or S	186	56				0	34				22	0				56	0	-130	-152	-186
Jeffrey	6041	257		10/01 - 05/15	C or S	261	257				0	155				102	0				257	0	-4	-106	-261

TABLE 1—1 Cont'd.

Grazing System and Allotment	ID No.	AUM'S ESTIMATED 1/ CARRYING CAPACITY: Livestock	Wildlife	6/ Season of Use	Kind of 4/ Livestock	FORAGE ALLOCATION: Alt. 1 No Action Livestock	Alt. 2 Proposed Action Livestock	Deer	2/ Elk	Wild Horse	Other	Alt. 3 Stock by Cond. Class Livestock	Deer	Elk	Wild Horse	Other	Alt. 4 No Grazing Livestock	Deer	Elk	Wild Horse	Other	INITIAL LIVESTOCK 3/ AUM ADJUSTMENTS: Alt. 1	Alt. 2	Alt. 3	8/ Alt. 4
Chalk Bluff	6043	455		10/01 - 05/15	C or S	593	455				0	273				182	0				455	0	-138	-320	-593
Red Mtn.	6047	279	258	12/01 - 06/30	C	330	251	34	37		198	151	34	37		288	0	34	37		439	0	-79	-179	-330
Poverty Hills	6050	179	116	12/01 - 06/30	C	44	159		116		0	96		116		63	0		116		159	0	+115	+52	-44
Lone Tree	6053	182		03/01 - 06/15	C	360	182				0	110				72	0				182	0	-178	-250	-360
Mono Mills Dorn	6055	3517	104	07/01 - 10/05	S	2112	3465	104			0	2079	104			1438	0	104			3465	0	+1353	-33	-2112
East Crater Mtn.	6079	136		12/01 - 06/30	C	75	136				0	82				54	0				136	0	+61	+7	-75
New Allotment	6080	142	24	06/16 - 02/28	C	130	130	12			22	78	12			74	0	12			152	0	0	-52	-130
George Creek	6082	183	136	04/15 - 06/30	C	183	183	60			67	110	60			140	0	60			250	0	0	-73	-183
GRAZING SEASON UNRESTRICTED																									
Keough	0001	29	0	Unspecified	C	0	29				0	18				11	0				29	0	+29	+18	0
Black Rock	0002	36	0	Unspecified	H	0	36			0	0	0 5/				36	0				36	0	+36	0	0
Evans	6009	342		Unspecified	C or S	364	342				0	205				137	0				342	0	-22	-159	-364
Zurich	6012	392	267	Unspecified	C or S	240	392		195		72	392		195		72	0		195		464	0	+152	+152	-240
Owens Valley	6013	48	40	Unspecified	C or S	137	48		33		0	48		33			0		33		48	0	-89	-89	-137
Sawmill Creek	6015	28	77	Unspecified	C	0	24	44	33		0	15	44	33		9	0	44	33		24	0	+24	+15	0
Owens Valley Common	6016	13	8	Unspecified	C or S	38	13		6		2	13		6		2	0		6		15	0	-25	-25	-38
Hot Creek	6018	321		Unspecified	C	505	321				0	193				128	0				321	0	-184	-312	-505
Little Round Valley	6020	43		Unspecified	S	45	43				0	26				17	0	0			43	0	-2	-19	-45
Black Mine	6023	47	31	Unspecified	C or S	34	47		5		26	29		5		44	0		5		73	0	+13	-5	-34
Poleta	6031	58	27	Unspecified	C or S	120	58		15		12	58		15		12	0		15		70	0	-62	-62	-120
Tinemaha	6033	159	70	Unspecified	C or S	250	159				70	159				70	0				229	0	-91	-91	-250
Long Valley	6044	11		Unspecified	C or S	22	11				0	7				4	0				11	0	-11	-15	-22
Tobacco Flat	6045	32		Unspecified	C	40	32				0	20				12	0				32	0	-8	-20	-40
West Santa Rita	6048	8	11	Unspecified	C or S	16	8		10		1	5		10		4	0		10		9	0	-8	-11	-16
Aberdeen	6049	221	131	Unspecified	C or S	224	231		65		66	139		65		158	0		65		297	0	+7	-85	-244
Casa Diablo	6081	40		Unspecified	C or S	78	40				0	24				18	0				40	0	-38	-54	-78
Alloted Area Subtotal		18891	4485			20505	18462	1854	635	187	1822	11894	1854	635	187	8342	0	1854	635	187	20232	0	-2043	-8611	-20505
UNALLOTED AREAS 7/																									
Bishop Unalloted		326	98			474	0	98			326	0	98			326	0	98	0	0	326	0	-474	-474	-474

TABLE 1—1 Cont'd.

Grazing System and Allotment	ID NO.	AUM'S ESTIMATED 1/ CARRYING CAPACITY: Livestock	Wildlife	6/ Season of Use	Kind of 4/ Livestock	FORAGE ALLOCATION: Alt. 1 No Action Livestock	Alt. 2 Proposed Action: Livestock	Deer	2/ Elk	Wild Horse	Other	Alt. 3 Stock by Cond. Class: Livestock	Deer	Elk	Wild Horse	Other	Alt. 4 No Grazing: Livestock	Deer	Elk	Wild Horse	Other	INITIAL LIVESTOCK 3/ AUM ADJUSTMENTS: Alt. 1	Alt. 2	Alt. 3	Alt. 4 8/
Sherwin Unalloted			6			0	0				6	0				6	0				6	0	0	0	0
S! Owens Valley		15	69			0	0				104	0				104	0				104	0	0	0	0
S. Inyo Mtns			516			31	0	380			136	0	380			136	0	380			136	0	-31	-31	-31
UNALLOTED AREA SUBTOTAL		341	689			505	0	478			572	0	478	0	0	572	0	478			572	0	-505	-505	-505
GRAND TOTAL		19232	5174			21010	18462	2332	635	187	2394	11894	2332	635	187	8914	0	2332	635	187	20804	0	-2548	-9116	-21010

1/ Carrying capacities are based on estimated forage occurring on areas of actual use on public lands only. For example, those for wildlife are based on preferred forage within known herd ranges within grazing allotments. Where dietary overlap occurs, the overlapping AUMs were deducted from the livestock carrying capacity. Refer to Appendix B for methodology used.

2/ Forage allowance shows maximum permitted livestock use and estimated use by mule deer, tule elk, and wild horses. Other includes non-comsumptive uses such as watershed and non-game wildlife species.

3/ Adjusted livestock AUMs show the difference between current preference and initial livestock stocking rates under the various alternatives.

4/ Kind of livestock: Cattle = C; Sheep = S; Domestic Horses = H.

5/ Allotment is in poor condition, therefore grazing would be deferred five years initially.

6/ Unspecified season would allow the operator to adjust livestock use to correspond to the adjoining City of Los Angeles DWP lease or USFS permit.

7/ No future allocations of forage to livestock are anticipated on these areas.

8/ No forage is reserved or allocated for wildlife, etc., under this Alternative.

* Allotments which will have an intensive management level of monitoring of range conditions.

TABLE 1–2
LIVESTOCK GRAZING SUMMARY
CURRENT SITUATION

Grazing System and Allotment	No. of Operators	ID No.	Current AUMs Preference	Season of Use	Class of Livestock	Total Acres	Public Land Acres	Est. Non-Federal Acres
INTENSIVE MANAGEMENT REST ROTATION SYSTEM								
Adobe Valley								
Implementation in 196"	2	6027	1241	06/15 - 11/15	C	25374	23774	1600
Wells Meadow Implemented in 1968		6051	152	05/15 - 06/08	C	1263	1263	783
SUB TOTAL	3		1393					
LESS INTENSIVE MANAGEMENT								
Fish Slough	5	6007	4456	05/15 - 06/08	S	35501	34861	640
Round Valley Common	2	6008	200	03/01 - 06/30	C	13236	10876	2360
			244	04/01 - 05/31	S			
Evans	1	6009	153	06/01 - 10/14	S	1360	1160	200
Bishop Creek	1	6010	274	04/01 - 05/31	S	12717	4717	8000
Zurich	1	6012	240	11/01 - 04/30	C	14548	8839	5709
Owens Valley	1	6013	137	01/01 - 05/31	C	11244	1582	9662
Independence	1	6014	420	04/01 - 06/30	C	16563	16443	120
Sawmill Creek*	1	6015		03/01 - 04/30	C	3922	2082	1840
Owens Valley Common	2	6016	38	11/01 - 03/31	C	958	638	320
Long Valley Common	2	6017	398	04/01 - 10/31	C	6814	4854	1960
Hot Creek	2	6018	107	04/01 - 10/31	C	3309	1349	1960
Crater Mtn.	2	6019	375	03/01 - 06/30	C	10984	10064	920
Little Round Valley	1	6020	45	06/01 - 06/15	S	1631	471	1160
Shannon Canyon	1	6021	12	03/01 - 05/15	C	8801	2920	5881
			12	10/16 - 12/31	C			
Wilfred Creek	1	6022	315	05/16 - 10/15	C	11278	6965	4313
Black Mine	1	6023	34	10/16 - 05/15	C	6407	1658	4749
Hammil Valley	2	6024	1950	10/01 - 06/15	C	42556	39156	3400
Marble Creek	1	6025	871	12/01 - 06/15	C	21797	18097	3700
Mathieu	1	6026	50	09/01 - 09/30	C	2050	1950	100
Black Lake	1	6028	49	07/01 - 10/31	C	1685	885	800
Chalfant Valley	1	6030	870	10/16 - 06/15	C	19023	13080	5943
Poleta	1	6031	120	12/01 - 05/31	C	2345	2345	0
Sherwin	1	6032	45	04/01 - 05/31	C	6939	3071	3868
Tinemaha	1	6033	250	12/01 - 05/31	C	3706	3626	80
Granite Mtn.	1	6034	192	09/01 - 10/15	S	17056	16306	750
Granite Basin	1	6035	300	07/01 - 08/31	S	3652	3652	0
Adobe Lake	1	6036	112	06/01 - 09/30	S	2974	1804	1170
Symons	1	6037	144	06/01 - 09/30	S	3814	3134	680
Bramlette	2	6038	1032	10/01 - 05/31	C	36518	31718	4800
Laws	1	6040	186	03/01 - 05/31	C	3625	3065	560
Jeffrey	1	6041	261	03/16 - 05/31	C	4452	4352	100
Ash Creek	1	6042	300	02/01 - 04/30	C	3706	3626	80
Chalk Bluff	1	6043	593	01/01 - 04/30	C	12757	12517	240
Long Valley	1	6044	100	05/01 - 10/31	C	10761	2461	8300

TABLE 1–2 Cont'd.

Grazing System and Allotment	No. of Operators	ID No.	Current AUM s Preference	Season of Use	Class of Livestock	Total Acres	Public Land Acres	Est. Non-Federal Acres
Tobacco Flatt	1	6045	40	06/15 - 10/14	C	504	304	200
Alabama Hills	1	6046	1364	02/01 - 05/31	C	60310	47010	13300
Red Mountain	1	6047	330	03/01 - 06/15	C	10071	4871	5200
West Santa Rita	1	6048	47	10/10 - 12/31	C	761	761	0
Aberdeen	1	6049	224	12/01 - 05/31	C	7279	4279	3000
Poverty Hills	1	6050	44	12/01 - 05/31	C	5074	4354	720
Lone Tree	1	6053	360	03/01 - 06/15	C	3719	3559	160
Mono Lake	1	6054	416	07/01 - 08/15	S	8591	7871	720
Mono Mills-Dorn	1	6055	1907	06/01 - 10/19	S	51235	41235	10000
SUB TOTAL	54		19617					
GRAND TOTAL	57		21010*					

*Does not include exchange of use on Sawmill.

Benton Range Unalloted	830
Hammil Valley Unalloted	40
South Inyos Unalloted	75123
Bishop Unalloted	18295
South Owens Valley Unalloted	4682
Hilton Creek Unalloted	264
Little Round Valley Unalloted	160
North Owens Valley Unalloted	566

Alternative 2 - Proposed Action

Under this alternative the estimated carrying capacity for each allotment would be allocated to resolve various conflicting and competing uses. Forage allocations, seasons of use, and other details of the proposed management program, were developed through the BLM planning system process. Under this alternative 18,462 AUMs would be allocated to livestock in 49 allotments, 187 AUMs to wild horses, and 2,967 AUMs to deer and elk. Maximum livestock utilization would be a 12-percent reduction from currently licensed use. Table 1-3 presents the planning process through which the Preferred Alternative was developed.

Livestock trailing would be permitted on about 160 miles of administrative stock driveway, and between private, BLM, and Forest Service allotments. Trailing permits would stipulate route and duration of travel. Bedding of sheep would be prohibited in the Ash Creek Allotment and Black Lake unalloted area.

Management Levels

Allotments were designated for intensive or less-intensive management based on the following criteria:

(1) Ownership patterns;
(2) Vegetation factors: condition, production, composition, physiological requirements, present use, potential for improvement, desired condition;
(3) Livestock operational requirements; and
(4) Resource objectives.

1.) Intensive Management -

Eight allotments involving 122,384 acres are proposed for intensive management (Table 1-1). Allotment management plans would be developed for these allotments. Rest-rotation grazing would be applied to six allotments (57,150 acres) and deferred-rotation grazing to two (65,234 acres).

These allotments were chosen for intensive management for a variety of reasons: four contain over 15,000 acres of public land each, seven are over 60 percent public lands, four (one already established) are set up to benefit deer habitat.

a) Rest-Rotation Grazing

Under this system various parts of an allotment are rested periodically from livestock grazing, usually for one or more years. Rest-rotation is designed to meet the physiological requirements of key forage plants, allow seedling establishment, completion of plant growth, and proper utilization of livestock forage. Rest-rotation systems may include several treatments depending upon the objectives for the allotment and the number of pastures. Utilization of key forage could vary from 50 to 75 percent in an individual grazing treatment area. This system allows desirable forage species to recover vigor and reproductive potential.

Rest-rotation systems were recommended on six allotments which exhibit some or all of the following characteristics:

TABLE 1-3
Planning Recommendations Affecting the Proposed Action

Livestock Recommendations	Conflicts with other Resource Management Recommendations and Values	Area Manager's Recommendations	Resource Tradeoffs
1. Allocates 18971 AUMs forage to livestock on 49 allotments.	1. There are 2332 AUMs of forage needed for mule deer, 635 AUMs for tule elk, and 187 AUMs for wild horses to maintain existing and increased populations. Of these 509 AUMs are in direct conflict with livestock due to wildlife forage and habitat requirements.	1. Reduc allocations of forage to livestock to meet other resource needs where there is competition.	1. A reduction of 509 AUMs of forage for livestock was made to account for the dictary overlap with other grazing ungulates. 1/
2a. Authorize a specific livestock class of certain allotments.	2a. Sheep grazing proposed for the Round Valley Allotment (6008) would adversely impact forage availability on deer winter range.	2a. Allow cattle use only on allotment 6008.	2a. Sheep grazing will not be allowed on allotment 6008.
2b. Seasons of use will be prescribed on certain allotments.	2b.1 Early spring livestock grazing would reduce the availability of succulent forbs required by sage grouse on the Wilfred Allotment (6022).	2b.1 Defer grazing on allotment 6022 until June of each year.	2b.1 Reduction of season of use by at least two months.
	2b.2 Proposed seasons of use for the Round Valley (6008), Sherwin (6032), and Wells Meadow (6051) Allotments would negatively impact forage availability on deer winter range.	2b.2 Change season of use on these allotments: 6008 and 6032 4/1-6/20 6/1-10/5.	2b.2 Eliminate spring grazing on 6051 by one month.
		6051 3/1-10/30 to 4/1-10/5	
		2b.2.2 Develop intensive management plans (rest-rotation) on these allotments.	2b.2.2 A restrictive management plan will be applied to these allotments.

TABLE 1-3 cont'd.

Livestock Recommendations	Conflicts with other Resource Management Recommendations and Values	Area Manager's Recommendations	Resource Tradeoffs
		2b.2.3 Area of use to be restricted to that needed to benefit deer winter range.	2b.2.3 Area of use for livestock will be reduced.
	2b.3 Yearlong grazing proposed on George Creek (6082), Alabama Hills (6046), and Independence (6014) would be damaging to riparian and aquatic habitats on these allotments.	2b.2 Change of season of use on 6014 and 6082 from yearlong to 4/1-6/30; 6046 from yearlong to 2/1-5/31. 6046 YL to 2/1-5/31	2b.3 Eliminate yearlong grazing on three allotments.
2c. Prescribe intensive management on four allotments only.	2.c.1 Less-intensive management, basically seasonal grazing, proposed for Marble Creek (6025), Laws (6040), Sawmill (6015), and Ash Creek (6042) Allotments would not adequately protect riparian vegetation along several streams.	2c.1.1 Develop an intensive management plan for allotment 6025 and 6042.	2c.1.1 A restrictive management plan will be applied to allotment 6025 and 6042.
		2c.1.2 Exclude livestock use from the affected streams.	2c.1.2 An undetermined amount of forage will not be available to livestock.
	2c.2 The less-intensive management proposed for the Hot Creek (6018) Allotment would not adequately protect riparian and sage grouse habitat.	2c.2 Develop management in cooperation with the U.S. Forest Service to provide riparian and sage grouse habitat.	2c.2 As yet undetermined grazing restrictions will be developed.

TABLE 1-3 cont'd.

Livestock Recommendations	Conflicts with other Resource Management Recommendations and Values	Area Manager's Recommendations	Resource Tradeoffs
3a. Prescribe burn 31,000 acres of brushland to increase livestock forage.	3a. Burning will temporarily deteriorate visual quality, air quality, and other values.	3a. Prescribe burn 29,000 acres under restrictives and protective guidelines.	3a.1 An increase of 849 AUMs of livestock forage will be available from burns on 18,000 acres.
3b. Chemically treat 8560 acres of big sagebrush to increase livestock.	3b. Approximately 2500 acres of proposed treatment acreage would be detrimental to sage grouse habitat and visual resource values.	3b.1 Chemically treat 8560 acres.	3b.1 An increase of 1195 AUMs of livestock forage.
		3b.2 Of the 2500 acres of sage grouse habitat in the Granite Mtn. (6034) Allotment, 50% will be treated to maximize edge effect for sage grouse and to meet visual resources standards.	3b.2 Edge effect for sage grouse will be maximized and visual resource values will be maximized and visual resource values will be maintained on 1225 acres resulting in a loss of approximately 113 AUMs of forage for livestock.

1/ Refer to Appendix B for a discussion of forage allocation methodologies used.

(1). Substantial improvement in range condition is desired and attainable through grazing management. In these allotments the majority of the range is in fair condition. Due to favorable site characteristics (soils, precipitation, and topographic position) the allotments show the potential for substantial improvement.

(2.) At least one full year of rest is needed for key species seedling establishment, i.e., Indian ricegrass and desert needlegrass.

(3.) The allotment contains significant portions of crucial deer winter range.

b) Deferred-Rotation Grazing

Deferred rotation delays grazing on a portion of the allotment each year during the growing period and rotates this delay among pastures during a cycle of several years. This allows each part of an allotment to rest successively during the growing period. It aids in seed production, establishment of seedlings, and restoration of plant vigor (as does restoration). Deferred-rotation differs from rest-rotation in that there is no year-long rest provided for any one part of an allotment, rather a delay in grazing.

Deferred-rotation is recommended on two allotments which exhibit some or all of the following characteristics:

(1.) The allotments are primarily in fair to good ecological condition.

(2.) The allotment would be managed in conjunction with U.S. Forest Service allotments presently under deferred-rotation grazing.

(3.) The season of use has been early spring to late spring.

2) Less Intensive Management

Forty-one allotments (419,616 acres) are designated for this level of management. On 25 allotments the numbers and class of livestock and season of use would be regulated. This management level was chosen for these allotments to alleviate conflicts with wildlife and provide for plant maintenance needs, and several show a potential for improvement of ecological condition. The remaining 16 allotments would not have season-of-use restrictions. Public lands in these 16 allotments usually comprise a small percent of the total. Also present range management practices are maintaining the range in a generally satisfactory condition on most of the allotments.

Management Adjustments

1) Allotment Size

Twenty-eight allotments would be combined, divided, reduced, or enlarged (for example, through inclusion of previously unalloted areas) for the benefit of various resource and management objectives. Refer to Map 1-2 (inside back cover) for a comparison of the existing allotment boundaries to the proposed allotment boundaries. Table 1-4 lists the proposed allotments and the existing allotment(s) appropriate to their formation.

TABLE 1—4
MANAGEMENT ADJUSTMENTS
ALLOTMENT CHANGES

Proposed Allotment		Existing Allotment(s)	
Round Valley	(6008)	Round Valley Common	(6008)
Marble Creek	(6025)	Marble Creek	(6025)
Adobe Valley	(6027)	Adobe Valley	(6027)
Sherwin	(6032)	Sherwin	(6032)
Wells Meadow	(6051)	Wells Meadow	(6051)
Ash Creek	(6042)	Ash Creek	(6042)
		Adjacent Unalloted Areas	
Independence	(6014)	Independence	(6014)
		Adjacent Unalloted Areas	
Alabama Hills	(6046)	Alabama Hills	(6046)
Black Lake Unalloted	(0003)	Unalloted Area	
Fish Slough	(0004)	Unalloted Area	
Volcanic Tablelands	(6007)	Fish Slough	(6007)
		Adjacent Unalloted Area	
West Crater Mountain	(6019)	Crater Mountain	(6019)
Shannon Canyon/Baker Creek	(6021)	Shannon Canyon/Baker Creek	(6021)
Wilfred Creek	(6022)	Wilfred Creek	(6022)
Hammil Valley	(6024)	Hammil Valley	(6024)
Mathieu	(6026)	Mathieu	(6026)
Black Lake	(6028)	Black Lake	(6028)
Chalfant Valley	(6030)	Chalfant Valley	(6030)
Granite Mountain	(6034)	Granite Mountain	(6034)
		Granite Basin	(6035)
Adobe Lake	(6036)	Adobe Lake	(6036)
Symons	(6037)	Symons	(6037)
Bramlette	(6038)	Bramlette	(6038)
Laws	(6040)	Laws	(6040)
Jeffrey	(6041)	Jeffrey	(6041)
Chalk Bluff	(6043)	Chalk Bluff	(6043)
Red Mountain	(6047)	Red Mountain	(6047)
Poverty Hills	(6050)	Poverty Hills	(6050)
Lone Tree	(6053)	Lone Tree	(6053)
Mono Mills - Dorn	(6055)	Mono Mills - Dorn	(6055)

TABLE 1—4 Cont'd.

East Crater Mountain	(6079)
New Allotment	(6080)
George Creek	(6082)
Keough	(0001)
Black Rock	(0002)
Evans	(6009)
Zurich	(6012)
Owens Valley	(6013)
Sawmill Creek	(6015)
Owens Valley Common	(6016)
Hot Creek	(6018)
Little Round Valley	(6020)
Black Mine	(6023)
Poleta	(6031)
Tinemaha	(6033)
Long Valley	(6044)
Tobacco Flat	(6045)
West Santa Rita	(6048)
Aberdeen	(6049)
Casa Diablo	(6081)
Bishop Unalloted	
Sherwin Unalloted	
S. Owens Valley Unalloted	
S. Inyo Mountains Unalloted	

Mono Lake	(6054)
Adjacent Unalloted Areas	
Crater Mountain	(6019)
Hammil Valley	(6024)
Marble Creek	(6025)
Unalloted Area (Blind Springs Hill)	
Alabama Hills	(6046)
Unalloted Area	
Unalloted Area	
Evans	(6009)
Mono Mills - Dorn	(6055)
Zurich	(6012)
Owens Valley	(6013)
Sawmill Creek	(6015)
Owens Valley Common	(6016)
Hot Creek	(6018)
Long Valley Common	(6017)
Little Round Valley	(6020)
Adjacent Unalloted Areas	
Black Mine	(6023)
Poleta	(6031)
Tinemaha	(6033)
Long Valley	(6044)
Tobacco Flat	(6045)
West Santa Rita	(6048)
Aberdeen	(6049)
Long Valley	(6044)
Round Valley Common	(6008)
Bishop Creek	(6010)
Adjacent Unalloted Areas	
Sherwin	(6032)
S. Owens Valley Unalloted	
S. Inyo Mountains Unalloted	
West Santa Rita	(6048)

2) Grazing Use

Grazing use would increase or decrease based on forage availability, season-of-use adjustments, range suitability, ecological condition of the vegetation, utilization, and protection or maintenance of other resource values such as wildlife and watershed.

Livestock carrying capacity (forage availability) was determined from 1978 vegetation inventories. Proposed stocking levels (forage allocation) are based on an average maximum of 50 percent utilization for key forage plants, with lower utilization levels for less preferred plants (see Appendix B). The remaining plant material is allocated to other resource needs such as watershed protection, non-grazing wildlife, and visual resource management (see Table 1-1).

Grazing use would be licensed on two small, isolated proposed allotments (Black Rock - 0002 and Fish Slough - 0004) where unauthorized grazing use is currently occurring. Also, licensed livestock use levels on five allotments where errors were made in recording the percent of Federal range would be adjusted to conform to current carrying capacity.

3) Season of Use

Season-of-use changes were made in 35 allotments to meet vegetation, wildlife, and livestock operation requirements (Tables 1-1 and 1-2).

4) Range Facilities and Vegetation Treatments

Additional fences and water sources would be necessary to implement intensive grazing management as well as to provide for livestock control and better distribution of grazing pressure on less intensively managed allotments. Typical water developments would include springs, wells, and pipelines. Vegetation treatments would include spraying, prescribed burning, and seedings. Existing and proposed range improvements are shown on Map 1-2 (back cover).

Table 1-5 presents the estimated number of water developments, miles of fences, and acreages of different treatments needed to implement the proposed grazing management. It also includes estimated costs, acres of disturbance in the short and long term, and a chronological breakdown of project construction. Site-specific assessments will be conducted prior to the actual construction or treatment phase. These environmental analyses (EAs) will document the magnitude and type of impacts of a proposed development or treatment and will be based on this analysis of impacts and possible mitigating actions. These site-specific EAs will supplement the discussion and analysis presented in this EIS.

5) Maintenance

Maintenance will be conducted in accordance with 43 CFR 4120.6. The BLM will inspect water developments periodically and perform preventive maintenance to ensure that they remain in usable condition.

Monitoring Programs -

Alternatives 2 and 3 provide for the following resource evaluation studies.

1) Condition and Trend

Trend studies, according to BLM Manual 4412.22c, will be established in key areas in each pasture on intensively managed allotments before implementing grazing systems and will be read once each grazing cycle. On the less intensively managed allotments, trend studies will be conducted on key areas less frequently than on the intensively managed allotments. These studies will be used to determine browse conditions, watershed condition, and vegetation condition and trend.

2) Utilization

During and/or after each pasture is grazed on allotments with grazing systems and on selected less intensively managed allotments, utilization of forage will be measured by the key species method described in BLM Manual 4412.22b. Utilization studies aid in determining whether stocking rates are at proper levels and will be used to make future adjustments in livestock use levels.

3) Actual Use

Each operator will report actual use to the Bishop Area Office at the end of the grazing season. This report will show how many livestock grazed a particular area and for what period of time.

4) Wildlife Studies

Studies to monitor terrestrial and aquatic habitat conditions will continue, including water quality studies, exclosures, utilization cages, vegetation transects, and seeding plots. Population trends of both game and non-game species will be studied. The timing of any particular study will depend on the species and habitat being evaluated. These data will be used to evaluate trends in wildlife numbers and habitat conditions to insure the attainment of wildlife objectives.

Implementation Schedule -

Grazing management implementation would begin in 1982 and continue through 1986. Livestock grazing adjustments would be made in 1982 except in the Chalfant Valley, Ash Creek, and Hot Creek Allotments where a three-year phase-in would be used to reduce economic hardship to the operator involved. The implementation schedule for the proposed range facilities is given in Table 1-5.

Personnel Requirements

Three additional fulltime BLM positions would be required to implement and monitor the grazing management program: one range conservationist and one range rider on the Bishop Resource Area Staff; and one engineering technician on the Bakersfield District Operations Staff.

Alternative 3 - Stocking by Condition Class

This alternative would set the stocking level in relation to the average ecological condition class of an allotment. This level of stocking would be lower than that of both the Proposed Action and the No Action Alternative (Table 1-1). Maximum total livestock use under this alternative would be 11,894 AUMs, a reduction of 43 percent from current licensed use. Forage allowances for wildlife would be 2,967 AUMs and 187 AUMs for wild horses. Allotment boundaries, seasons of use, livestock trailing, etc., would be as for the Proposed Action.

The following criteria would be used to set the initial stocking levels:

Condition "good" - The initial stocking rate would be the same as for the Proposed Action. Average utilization of key forage species would be 50 percent.

Condition "fair" - The initial stocking rate would be 60 percent of that for the Proposed Action. Average utilization of key forage species would be 30 percent.

Condition "poor" - The initial stocking rate would be 60 percent of that for the Proposed Action. Average utilization of key forage species would be 30 percent. Grazing would be deferred five years (1982-1986) to allow for plant recovery.

These criteria are based on the average ecological condition for a given allotment as determined by the 1978 vegetation inventories. Changes in the stocking level would depend upon changes in range condition. Range facilities and treatments shown in Table 1-5 would be implemented as under the Proposed Action. Approximately 150 miles of additional fences and three water developments would be required to separate allotments presently under joint management with the U.S. Forest Service and the City of Los Angeles.

Alternative 4 - No Livestock Grazing

All existing grazing preferences and cooperative agreements would be cancelled. No livestock grazing or new livestock facilities would be allowed on the public lands. Existing facilities would be retained only if they benefitted other resources or concerned parties, for example, U.S. Forest Service.

Trespass use of the vegetation on public lands would be prosecuted. However, trailing permits would be issued for livestock to cross public lands. Approximately 200 miles of boundary fences would have to be constructed to prevent livestock from straying onto public lands. Such fencing is the legal responsibility of adjacent landowners (43 CFR 4120.3).

DESIGN RESTRICTIONS

BLM will adhere to the following instructions in designing and building facilities in the Benton/Owens Valley EIS area:

(1.) Permanent two-track roads will be permitted only when necessary.

TABLE 1—5
MANAGEMENT
COSTS, DISTURBANCE AND IMPLEMENTATION SCHEDULE

Construction Schedule	Allotment	Type of Improvement	Units		Approximate Cost($)	Acreage Disturbed Short Term	Acreage Disturbed Long Term
Year 1 (1982)	Adobe Valley	AMP revision	1	each	2200		
		Water developments	5	each	25000	2.5	1
		Fences	13.5	miles	29700	13.5	28
		Chemical brush control	3760	acres	37600	3760	0
	Wells Meadow	None Proposed					
	Alabama Hills	AMP development	1	each	4400		
		Water developments	3	each	7500	1.5	0.6
		Fences	7.5	miles	16500	7.5	1.6
		Prescribed burns	7000	acres	70000	7000	0
	Independence	AMP development	1	each	4400		
		Water developments	4	each	10000	2	0.8
		Fences	5.5	miles	12100	5.5	1.1
		Prescribed burns	11000	acres	110000	11000	0
	Marble Creek	AMP development	1	each	4400		
		Water development	2	each	5000	1.0	0.4
		Fences	13	miles	28600	6.5	2.6
	Ash Creek	AMP development	1	each	4400		
		Water developments	8	each	20000	4	1.6
		Fences	21	miles	46000	21	4.2
	Fish Slough	Fences	5.5	miles	12100	5	1.2
	George Creek	Water developments	2	each	5000	1	0.4
	Tobacco Flat	Water developments	1	each	2500	0.5	0.2
TOTAL YEAR 1 COST:					423800		
Year 2 (1983)	Sherwin	AMP development	1	each	4400		
		Water developments	2	each	5000	1	0.4
		Fences	3.5	miles	7700	3.5	0.8
	Round Valley	AMP development	1	each	4400		
		Water developments	2	each	5000	1	0.4
		Fences	8.5	miles	18700	8.5	1.7
	Adobe Lake	Fences	2	miles	2200	2	0.4
	Sawmill Creek	Fence	1	mile	2200	1	0.2
	Bramlette	Water developments	2	each	10000	1	0.4
		Fences	6	miles	13200	6	1.2
		Seeding	14720	acres	147200	0	0
TOTAL YEAR 2 COST:					219800		
Year 3 (1984)	Chalk Bluff	Water developments	3	each	15000	1.5	0.6
		Fences	14	miles	30800	14	2.8
	Laws	Fences	2	miles	4400	2	0.4
	Chalfant Valley	Water developments	1	each	5000	0.5	0.2
	West Crater Mt.	Water developments	1	each	5000	0.5	0.2
		Fences	2	miles	4400	2	0.4
	East Crater Mt.	Water developments	2	each	10000	1	0.4
		Fences	1	mile	2200	1	0.2
	Mono Mills	Water Developments	7	each	25000	3.5	1.4
		Fences	6	miles	13200	6	1.2
		Prescribed burning	8000	acres	80000	8000	0
TOTAL YEAR 3 COST:					228600		
Year 4	Red Mountain	Water developments	1	each	5000	0.5	0.2
	Granite Mountain	Water developments	3	each	15000	1.5	0.6
		Fences	11	miles	24200	11	2.2
		Prescribed burning	3000	acres	30000	3000	0
TOTAL YEAR 4 COST:					110200		
Year 5 (1986)	Keough	Fences	0.25	mis.	500	0.3	0.1
	Owens Valley	Fences	0.5	miles	1100	0.5	0.1
	Zurich	Fences	1	mile	2200	1	0.2
	Tinemaha	Fences	1.5	miles	3300	1.5	0.3
	Aberdeen	Fences	0.5	miles	1100	0.5	0.1
	Evans	Fences	1.0	mile	2200	1	0.2
(unalloted)	Black Lake	Water developments	3	each	12500	1.5	0.6

TABLE 1—5 Cont'd.

Construction Schedule	Allotment	Type of Improvement	Units		Approximate Cost($)	Acreage Disturbed Short Term	Acreage Disturbed Long Term
		Fences	12	miles	26400	12	2.4
	Volcanic Tablelands	Fences	1	mile	2200	1	0.2
	Hammil Valley	Water developments	8	each	30000	4	1.6
		Fences	8	miles	17600	8	1.6
TOTAL YEAR 5 COST:					99150		

Total miles of fence	146.75
Total number of water developments	60
Total acres chemical brush control	7360
Total acres prescribed burn	29000

(2.) Projects will disturb soil, vegetation, and water resources as little as possible (BLM policy; BLM visual resource policy, Manual 8400).

(3.) Disturbed soil will be finished to blend into the surrounding soil surface and reseeded as needed with a mixture of native species to replace ground cover and reduce soil loss from wind and water erosion (BLM policy; BLM visual resource Manual 8400).

(4.) BLM will conduct intensive cultural resources field inventories (Class III) of specific areas that would be impacted by implementing activities prior to approval. If historic or cultural sites or properties are identified, every effort will be made to avoid adverse effects. However, where that is not possible, the BLM will consult with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation in accordance with the programmatic memorandum of agreement by and between the Bureau and the Council, dated January 14, 1980, which sets forth a procedure for developing appropriate mitigative measures to lessen the impact of adverse effects. Additionally, the Bureau will coordinate mitigative measures with appropriate representatives of the Native American community and afford such representatives ample opportunity for comment pursuant to a memorandum of understanding pertaining to "Bureau of Land Management, California, Policy for Native American Concerns and Cultural Resource Management," among the Native American Heritage Commission and the State Historic Preservation Officer and the Bureau of Land Management, California.

(5.) The BLM will consult formally with the U.S. Fish and Wildlife Service (FWS) on any projects potentially impacting federally listed endangered or threatened wildlife species. The FWS will be consulted informally regarding projects impacting proposed species and species under formal status review (Section 7, Endangered Species Act of 1973, as amended, 1978, 1979).

(6.) The BLM will consult formally with the California Department of Fish and Game concerning potential project impacts on State-listed species of wildlife (BLM, California, policy).

(7.) BLM will conduct intensive field inventories of specific areas where potential impacts to rare plant species occur. Full ESA protection will be afforded to all FWS species that are formally listed or candidate for threatened or endangered status. In addition those species designated by California Fish and Game will be given full ESA protection (Calif. BLM policy, IM CA-80-256). Plants in the California Native Plant Society list #2 require special consideration during any environmental assessment to prevent them from becoming listed by FWS or California Fish and Game.

(8.) New fences in mule deer habitat will be constructed to meet BLM specifications to protect these animals. Existing fences in such habitat will be modified to meet the specifications. Specifications include:

Overall Height = 42"
Wire Spacing = 16" ground to first wire
6" first wire to second
8" second to third
12" third to top

(9.) All water developments will be constructed to allow wildlife safe, unrestricted use of the facility. Such design features could include separate drinking facilities at ground level which may be fenced for the exclusive use of wildlife. Waters will not, under normal circumstances, be turned off except to prevent freezing or malfunctions.

(10.) Riparian areas identified as needing protection to maintain wildlife habitat, visual quality, and water quality will be fenced. Fencing of riparian areas would be completed within the five-year period established for completion of range facilities.

(11.) Prescribed fires will be planned with specific goals and objectives, under prescribed constraints that will assure minimum damage to plant cover and soil. They will be scheduled in the spring when new grass growth is less than two inches, and in the fall when root reserves are near spring levels after initial fall rains. They will be conducted under the following additional constraints:

(a) Soil must be moist;
(b) Wind speed minimum - 8 miles per hour; maximum - 20 miles per hour;
(c) Fine fuel moisture: 10-30 percent;
(d) Relative humidity: 20-60 percent.

To control fire where natural barriers cannot be used, firelines will be constructed by handline methods. The width of firelines will be restricted to 3-8 feet, depending on fuel type and arrangement. Firelines will be reseeded and water-barred to prevent erosion. Weather will be carefully monitored before and during burns to assure adherence to prescription constraints.

Buffer strips will be established along both sides of streams to protect riparian vegetation (generally a minimum of 75 feet), (BLM Manual 6740).

(12.) Only chemicals registered with the Environmental Protection Agency and approved for BLM use will be applied in spraying projects, and then only by certified personnel following approved application guidelines.

(13.) Where aerial chemical treatments could impact riparian and aquatic habitats, buffer strips (generally a minimum of 75 feet) will be established for protection. Spraying programs will not occur in the vicinity of such habitats when wind speed exceeds 5 miles per hour (BLM Manual 6740).

(14.) BLM will determine seeding mixtures (native species only) on a site-specific basis. Resource specialists will consider wildlife, watershed, range, and other resource needs in formulating seed mixtures.

(15.) Where appropriate, sagebrush control would be carried out in irregular patterns to maximize edge effect for the benefit of sage grouse and other wildlife.

(16.) A visual resource contrast rating will be conducted for all construction sites (BLM policy; BLM Visual Resource Policy Manual 8400). Projects that would impair visual resources will be modified by design, relocation, or abandoned if necessary to meet visual resource objectives.

(17.) Wilderness Study Areas and contested wilderness inventory units will be regulated so as not to impair the suitability of these areas for preservation as wilderness. Management of these areas will be in accordance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP) (December 12, 1979).

(18.) Grazing management activity will comply with the Clean Air Act (as amended, 1977) and public lands in the EIS area will be managed under the Class II designation. Lands under wilderness review will also be managed under Class II, as set forth in the IMP.

INTERRELATIONSHIPS

The BLM management of public lands in the EIS area is related to management practices of other Federal and State agencies and private enterprises. Close coordination between these entities is required to achieve common goals and efficient management of common resources.

Federal Actions

Bureau of Land Management

The Proposed Action was developed through the BLM planning system. Objectives found in the Benton/Owens Valley Management Framework Plan which led to the Proposed Action are shown in Table 1-3.

The Carson City District of BLM will be a cosigner to the proposed Montgomery Pass Wild Horse Management Plan developed by the U.S. Forest Service (Toiyabe and Inyo National Forests).

U.S. Forest Service

The U.S. Forest Service is involved cooperatively with the Bakersfield District on several programs and plans: Montgomery Pass Wild Horse Management Plan (proposed), Owens Valley Tule Elk Habitat Management Plan (1977), Sage Grouse Habitat Management Plan (1966), Big Game Management Plan for Bishop Deer Management Unit (1963), and Big Game Management Plan for the Casa Diablo Deer Herd Unit (1964). In addition, coordinated grazing management procedures are practiced on 10 allotments adjacent to the Inyo National Forest boundary, pursuant to informal agreements between the two agencies.

Cooperative grazing management by the Inyo National Forest would need to be implemented on 23 allotments. The level of cooperative management would include coordinating seasons of use and livestock numbers, designing and implementing AMPs, and supervising grazing use on jointly managed allotments.

State and Local Government Actions

Nevada Fish and Game Commission

The Nevada Fish and Game Commission was involved in the development of the Big Game Habitat Management Plan for the Casa Diablo Deer Herd Unit.

California Department of Fish and Game

The California Department of Fish and Game is a cosigner to all wildlife plans previously mentioned. In addition there is a high level of cooperation, both formal and informal, between the two agencies for management of the wildlife resource. Cooperative relations between California BLM and California Department of Fish and Game are outlined in the Master Memorandum of Understanding of 1969.

California Department of Fish and Game would cooperate in the development of wildlife habitat exclosures; design of AMPs for allotments with special wildlife values, for example, Sherwin; and environmental assessments for several projects, for example, sagebrush control.

City of Los Angeles

The City of Los Angeles is a major landowner in the EIS area. Several allotments, especially in the Owens Valley, are comprised of public land administered in conjunction with lands leased (by the livestock operator) from Los Angeles. In addition the City is a cosigner to the Owens Valley Tule Elk Habitat Management Plan.

Counties of Mono and Inyo

Governing agencies within these two counties have identified land needs totaling approximately 5,000 acres, primarily for urban expansion and agricultural conversion, but also for such items as community parks and sanitary landfills.

Private Actions

Affected livestock operators would help design AMPs (in accordance with the Public Range Lands Improvement Act of 1978) and could be responsible for maintaining designated range facilities. Operators would need to construct fences on at least two currently unalloted areas.

COMPARISON OF THE ALTERNATIVES

The key elements and major impacts of the alternatives are summarized in Tables 1-6 and 1-7. Forage allocations to livestock are different for each alternative, but range developments and vegetation treatments are nearly identical under Alternatives 2 and 3. The difference is that Alternative 3 includes 150 miles of

boundary fencing and several additional water developments. Alternative 4 includes 200 miles of boundary fence. Other than that, neither Alternative 1 nor 4 include any range improvements.

Ecological range condition and wildlife habitat condition are projected to improve as forage allocations to livestock decrease under the Proposed Action, and would be even better under Alternative 3 and still better under No Grazing. The risk of impacts to sensitive plants would be reduced by reduced grazing, and water quality and stream channel stability would improve. By the year 2005 forage production increases under the Proposed Action would result in an increase of about $60,000 in annual regional livestock sales (assuming a continuation of current forage allocation ratios). Under Alternative 3 the increase would be about $125,000.

The costs of the Proposed Action would be (1) $1,082,000 for AMP development and range developments and vegetation treatments over a 5-year period, and (2) an initial loss of $80,000 in regional livestock sales that would gradually be recouped (as forage production increased), but would initially substantially impact two of 18 operators. Alternative 3 would cost somewhat more due to the additional fencing and increased initial impacts on livestock operators, but it would result in greater economic and ecological benefits in the long-term. The No Livestock Grazing Alternative would cost nothing and would be the most ecologically beneficial but would have substantial economic impacts on 12 operators.

TABLE 1—6

KEY ELEMENTS

	Alt. 1 No Action	Alt. 2 Proposed Action	Alt. 3 Condition Class	Alt. 4 No Grazing
Acres of Land Affected				
BLM	542,000	542,000	542.000	542,000
Other	120,000	120,000	120,000	120,000
Number of Allotments	45	49	49	0
Major Issues				
1) Forage competition between livestock, deer, and tule elk.				
2) How to correct poor ecological condition on 73,500 acres				
3) Potential impacts to lands under wilderness review				
Unalloted Areas				
Number	8	4	4	Entire Area
Total Acres	99,960	98,100	98,100	
Current Livestock Carrying Capacity (AUMs)	19,232	19,232	19,232	19,232
Dietary Overlap with Other Ungulates	509	509	509	509
AUM Allocations				
Livestock	21,010	18,462	11,894	0
Deer	0	2,332	2,332	2,332
Tule Elk	0	635	635	635
Wild Horses	0	187	187	187
Miles of Fence				
Internal Fence	0	146.75	146.75	0
Boundary	0	0	150	(200)[1]
Water Developments	0	60	63	0
Chemical Brush Control	0	7,360 ac.	7,360 ac.	0
Prescribed Burn	0	29,000 ac.	29,000 ac.	0
Cost of AMPs and Improvements	0	$1,082,000	$1,420,000	0
Implementation Period:	N/A	5 Years	5 Years	5 Years

1/ This fencing would be the legal responsibility of adjacent landowners. (43 CFR 4120.3)

TABLE 1—7

COMPARISON OF LONG—TERM MAJOR IMPACTS OF
THE GRAZING MANAGEMENT ALTERNATIVES BY THE YEAR 2005 [1]

Element	Unit	Current Status	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Stocking by Condition Class	Alternative 4 No Grazing
			VEGETATION			
Ecological Range Conditions						
Good	Acres	199730	211185	279527	353671	379887
Fair		265053	263722	223151	158857	142991
Poor		73449	63325	35554	25704	15354
Forage Production	AUM's	18891	20109	23852	26617	26084
Sensitive Plants		Variable	Expansion of 2 species restricted. Other impacts not predictable	Same, but reduced stocking could help.	Same with possible benefits from reductions.	Expansion of 2 species likely. Others might benefit from no grazing.
			WILDLIFE			
Mule Deer Browse Trend						
Improving	Acres	358	358	8762	8762	28396
Declining		34923	34923	27354	27354	7673
Static		68250	66852	67485	67485	67485
Tule Elk Habitat-Ecological Condition						
Good	Acres	18597	18597	23805	29627	31733
Fair		25985	25985	22227	17310	14654
Poor		3538	3538	2088	1183	0
Sage Grouse Habitat-Ecological Condition						
Good	Acres	6793	8497	9068	14810	19135
Fair		11118	10680	10442	6613	4347
Poor		6148	4882	4549	2636	577
Upland Game/Nongame Habitat Ecological Condition						
Good	Acres	199730	211185	279527	353671	379887
Fair		265053	263722	223151	158857	142991
Poor		73449	63325	35554	25704	15354
Riparian/Aquatic		Decline	Decline	Improve	Improve	Improve
Pinyon/Juniper		Static	Static	Improve	Improve	Improve
Sagebrush/Bitterbrush		Static	Static	Improve	Improve	Improve
			WATER			
Quality and Channel Stability		Varies by Stream	Static to Decline	Improve	Improve	Improve
			ECONOMICS			
Regional Sale of Cattle	$ Change from present per year		-5,000 (No Change)	+12,000 (-16000)	+41,000 (-66000)	-170,000 (-170000)
Regional Sale of Sheep/Wool			-21,000 (No Change	+48,000 (-64000)	84,000 (-133000)	-240,000 (240,000
Operators Substantially impacted	Number		None (None)	None (2)	1 (5)	12 (12)

1 Short term impacts (during the 5 year implementation period) are shown in parenthesis for some elements.

CHAPTER 2

AFFECTED ENVIRONMENT

CHAPTER 2
AFFECTED ENVIRONMENT

This section describes the environmental components likely to be impacted by the proposed or alternative grazing management programs. Descriptions are designed to be commensurate with the importance of the impact and to enable the reader to understand the environmental consequences of the various impacting elements of the proposed or alternative grazing management.

CLIMATE AND AIR QUALITY

The climate of the area reflects a transition between climates of the Mojave Desert, Great Basin, and the Sierra Nevada Mountains. Arid or semi-arid conditions prevail throughout most of the area due to the rain-shadow effect on the Sierra Nevada Mountains. Storms usually approach from the northwest. Annual precipitation ranges from 4 inches at Keeler (NE edge of Owens Lake) to about 14 inches in the mountains east of Mono Lake. Much of the precipitation above 6,000 feet elevation falls as snow. Mean annual air temperature ranges from 64°F at Keeler to 35°F along the crest of the Inyo Mountains. Much of the Owens Valley unit is characterized by hot, dry summers and cool, slightly moist winters. The climate of the Benton unit reflects more of the Great Basin influence with warm, dry summers and cold, moist winters. A small amount of summer thunderstorm activity occurs here, however most of the precipitation falls in the winter months. Mean annual temperature and precipitation cycles for the Mono Lake and Bishop area are presented in Figure 2-1.

The prevailing winds are from the north or south with average speeds of 5 to 10 miles per hour. February, March, and April are the windiest months. Strong northerly gusts sometimes occur during this period. Summer thunderstorm activity sometimes creates strong localized gusts of wind.

Excellent air quality is typical of the area. Visibility exceeds 70 miles at least 85 percent of the time. Particulate matter content is usually minimal. However, strong dust storms occur around Owens Lake several times each spring and summer. The dust originates from the dry Owens Lake and severely reduces air quality in the southern Owens Valley during these periods. Similar air quality conditions are developing around Mono Lake as it recedes.

SOILS

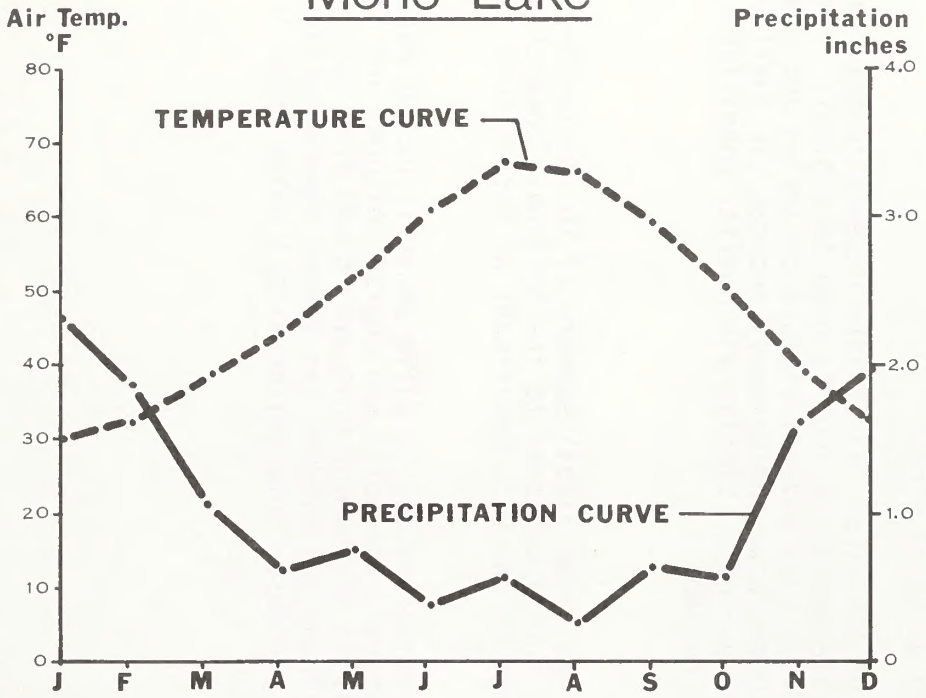
The soil information is based on the order 3 soil summary of the Benton/Owens Valley Planning Units. This soil survey conforms to the National Cooperative Soil Survey standards and was correlated by the U.S. Department of Agriculture, Soil Conservation Service.

Soils of the EIS area show wide variations due to differences in parent material, physiography, and climate. In general, the soils are coarse-textured and low in organic matter. Many of the soils in the Benton Unit are formed from volcanic ash, whereas most of the soils in the Owens Valley Unit are formed from granitic, sedimentary, or metamorphic rock sources. Some saline-alkali soils occur in the valley bottoms.

Figure 2-1

CLIMATE AND PHENOLOGY

Mono Lake

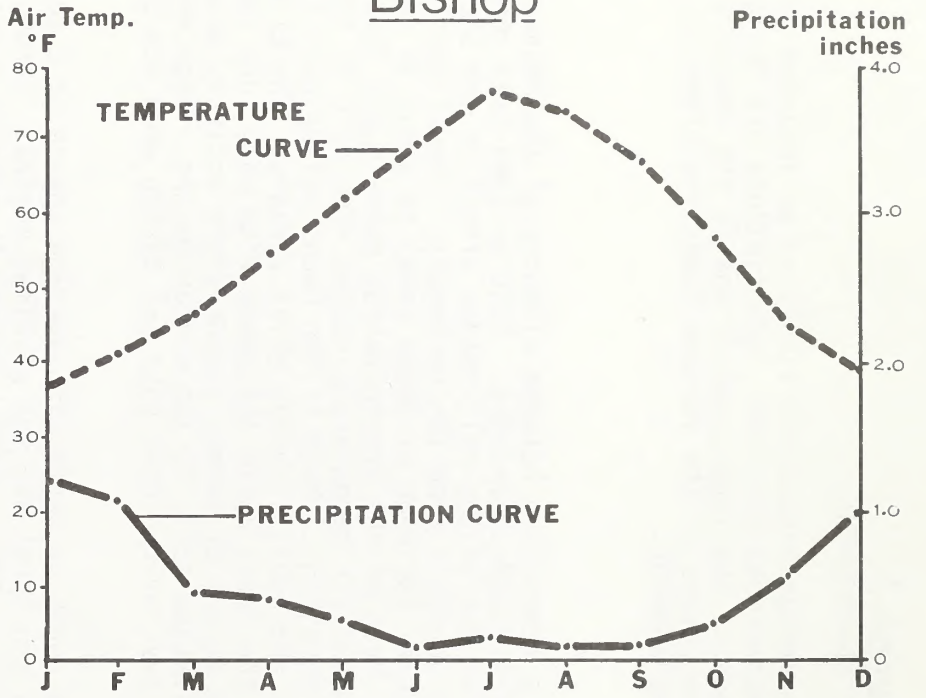


DEVELOPMENTAL STAGES OF IMPORTANT PLANTS

	Begin Growth	Peak Flowering	Seed Ripe	Seed Dissemination
Big Sagebrush	June 15	Sept. 1	Nov. 1	December 1
Antelope Bitterbrush	April 1	May 15	July 1	August 1
Indian Ricegrass	March 1	June 1	July 15	August 15
Perennial Forbs	April 15	June 1	Aug. 1	Sept. 1

Note: Climatic data is averaged over a 19 year period.
Mean Annual Precipitation - 12.53 inches
Mean Annual Temperature-47.5°F

Bishop



DEVELOPMENTAL STAGES OF IMPORTANT PLANTS

	Begin Growth	Peak Flowering	Seed Ripe	Seed Dissemination
Desert Bitterbrush	March 1	May 1	June 15	July 15
Desert Needlegrass	Feb. 15	April 15	June 1	July 1
Spiny Hopsage	Feb. 1	April 1	May 15	June 15
Perennial Forbs	Feb 5	April 15	June 1	July 1

Note: Climatic data is averaged over a 34 year period.
Mean Annual Precipitation- 5.72 inches
Mean Annual Temperature- 55.9°F

These soils generally have a poor or very poor suitability for range seeding because of sandy surfaces, low rainfall, or excessive slope. The water erosion hazard for soils in the area is generally low due to high infiltration rates and low rainfall intensities. The wind erosion hazard is high in some areas because of the loose, sandy surface soil. More detailed information on soil characteristics is presented in Table 2-1. Soil-association distribution is depicted on Map 2-1 (inside back cover).

Erosion

Water erosion is minimal in the area because of the many highly permeable soils, gentle topography, and low precipitation which occurs mainly during the winter. Wind erosion is potentially an important process on the floor of Owens Valley. However, for significant wind erosion to occur, soils must have a high content of fine sand, be devoid of vegetation, and have a loose surface. The only area fitting these conditions is that around Owens Lake.

WATER

The information on water resources for the EIS area was derived from data collected by a BLM stream survey (1979).

The stream survey crew sampled water quality at each perennial stream and some intermittent streams in the planning unit. At each stream temperature, turbidity, pH, dissolved oxygen, carbon dioxide, alkalinity, and total dissolved solids were determined. These particular constituents were sampled to assess the suitability of the water for sustaining fish populations. No further chemical or bacterial analysis was done.

The stream survey crew evaluated the channel stability of each stream using a U.S. Forest Service (1975) method (example in Appendix C). The channel stability rating assigned to each stream reflects the average conditions for the entire length of stream inventoried.

The water quality and channel stability of streams in the EIS area are the only water-resource parameters inventoried in detail. Information on stream flow, aquifer capacity and yield, ground-water quality, spring flow, and spring water quality was obtained from earlier inventories done by other agencies.

Surface Water Sources

Surface water resources are found throughout the EIS area. Of the many streams in the area, 37 flow perennially or have portions that flow perennially. Nineteen streams are entirely intermittent. Many ephemeral channels are dispersed throughout the area.

There are 25 named and 14 unnamed springs mapped in the EIS area as well as several springs that are not identified on maps. Several thermal springs occur in the Hot Creek and Crowley Lake areas.

TABLE 2—1

SOIL ASSOCIATIONS
AND ECOLOGICAL RANGE SITES

Soil Association	Soil Depth (inches)	Surface Texture	Drainage	Hydrologic Group	Wind Erosion Hazard	Frost-Free Period (days)	Soil Qualities Limiting Forage Production	Dominant Plant Species	Ecological Range Site
Soils of the Saline-Alkali Valley floors 1A Playa - Aquic Udorthents - Xerofluvents Association	Less than 60	loamy sand, Sandy	poor to somewhat excessive	A,C,D	High	125	high water tables, saline-alkali condition	Inland saltgrass, sedge	Alkali West Meadow 8-12 p.z.
								Basin wildrye, inland saltgrass, rubber rabbitbrush	Alkali Ashy sand 8-12" p.z.
1B Gila - Vinton Playa Association	Less than 60	sand, sandy loam	poor to somewhat excessive	A,D	High	175-225	Saline Alkali condition high water table	Inland saltgrass	Saline Meadow 4-6" p.z
								White bursage	Sandy 4-6" p.z.
								White bursage	Arid Loam 4-6" p.z.
Soil of the Mountainous Regions 2A Torriorthents - Haplargids - Rock outcrop Association	10-20	gravelly loamy sand, sandy loam silt loam;	well	D	Low	150-225	mostly shallow depths steep slopes, many rock fragments	spiny hopsage, Nevada ephedra	Loamy sand 6-8" p.z.
								Shadscale	Upland Arid Loam 4-6" p.z.
2B Torriorthents-Haplargids-Schawana Association	10-60	gravelly loamy sand, sandy loam, loam	Well	A,B,D	Low	125-175	shallow depth, steep slopes, many rock fragments	Singleleaf pinyon pine mountain big sagebrush, Antelope Bitterbrush	Steep sandy slope 8-10" p.z.
									Rocky loam 8-12" p.z.
									Steep Rocky loam 8-12" p.z.
2c Zono-Cowtrack Association	20-60	loamy sand, sand	somewhat excessive	A	High	100-125	Sandy textures, steep slopes	Mountain big sagebrush, Antelope bitterbrush, western needlegrass	Ashy loamy sand 10-14" p.z.

TABLE 2—1
SOIL ASSOCIATIONS
AND ECOLOGICAL RANGE SITES

Soil Association	Soil Depth (inches)	Surface Texture	Drainage	Hydrologic Group	Wind Erosion Hazard	Frost-Free Period (days)	Soil Qualities Limiting Forage Production	Dominant Plant Species	Ecological Range Site
2D Orthents-Xerolls-Rock Outcrop Asso-	10-40	gravelly loamy sand, sandy loam, silt loam	Well	C,D	Low	90-125	shallow depth, steep slopes, many rock fragments	Curleaf mountain mahogany	Mahogany Slope 10-14" p.z.
								Bristlecone Pine-Limber Pine	Subalpine Forest 10-14" p.z.
								Low sagebrush-Big sagebrush	Subalpine Sage-brush 8-10" p.z.
Soils of the Volcanic Tablelands and Old Terraces 3A Honova-Chidago Hammil Association	5 greater than 60	loamy sand, cobbly loamy	well to somewhat excessive	A,D	High	150	Sandy textures some shallow depths	Little leaved hor-sebrush, Shad-scale, Needle-leaved rabbit-brush	Rocky loamy sand 6-8" p.z.
								Fremont dalea, four winged saltbush	Ashy loamy sand 6-8" p.z.
								Spiny hopsage, Nevada ephedra	Loamy sand
3B Sherwin-Kamu Association	5-20	loamy sand, sand	well to somewhat excessive	D	High	125-150	mostly shallow depths sandy textures	Low sagebrush	Shallow loamy 10-14" p.z.
								Wyoming big Sagebrush Desert bitterbrush	Granitic Fan 8-10" p.z.
								Mountain big sagebrush Ante-lope bitterbrush	Ashy loamy sand 10-14" p.z.
Soils of the Inter mountain Valleys 4A Onom-Dystric Xeror-thents Association	less than 60	sand, loamy sand	excessive to some-what excessive	A	High	125	sandy textures	Antelope bitter-brush	Deep Ashy sand 10-12" p.z.
								Desert peach	Gravelly sand 10-12" p.z.

TABLE 2–1
SOIL ASSOCIATIONS
AND ECOLOGICAL RANGE SITES

Soil Association	Soil Depth (inches	Surface Texture	Drainage	Hydrologic Group	Wind Erosion Hazard	Frost-Free Period (days)	Soil Qualities Limiting Forage Production	Dominant Plant Species	Ecological Range Site
4B Eboda-Sawavu-Bentonhot Association	20 greater than 60	loamy sand	well to somewhat excessive	A,B	High	125-150	sandy textures	Wyoming big sagebrush Indian rice-grass	Sandy 8-10" p.z.
								Wyoming big sagebrush Desert needle-grass	Granitic fur 6-8" p.z.
Soils of the Stony Alluvial Fans 5A Yermo-Durorthids-Cajon Association	greater than 60	gravelly loamy sand, sandy loam, silt loam	well	B	Moderate	150-225	many rock fragments, some sandy textures and hardpans	Creosote Bush	Arid Limy Upland 4-6" p.z.
								Shadscale	Gravelly loam 4-6" p.z.
								White	Arid loam 4-6" p.z.
5B Xeric Torriorthents Xeric Haplargids-Dunmovin Association	greater than 60	stony loamy sand, sandy loam	well to somewhat excessive	A,B	High	150-200	sandy textures many rock fragments some hardpans	Spiny hopsage, Nevada ephedra	Loamy sand 6-8" p.z.
								Blackbrush Desert needle-grass	Shallow loamy sand 6-8" p.z.
5C Searles-Beverly-Toll Association	greater than 60	stony loamy sand, sand, sandy loam	well to somewhat excessive	A,B	High	140-175	sandy textures many rock fragments	Wyoming big sagebrush-Desert needle-grass	Granitic fur 6-8" p.z.
								Desert bitter-brush Desert needlegrass	Granitic fan 8-10" p.z.
								Antelope bitter-brush Mountain big sagebrush	Ashy loamy sand 10-14" p.z.
Soils of the Lava flows 6A Taboose-Chelan Krentz Association	greater than 60	stony loamy sand, sandy	well to somewhat excessive	A,B	Moderate	175-200	many rock fragments some sandy textures	Spiny hopsage, Nevada ephedra	Cindery loamy sand 4-8" p.z.

Mono Lake and Crowley Lake are the largest lakes in the EIS area. Other perennial lakes are Big Alkali Lake and Little Alkali Lake; Antelope Lake, Warren Lake, and River Spring Lakes are intermittent.

Fish Slough is a large freshwater slough complex. Less than 100 acres of the complex are on public land.

Those water sources not impacted by grazing activities will not be discussed further.

Surface Water Quantity and Quality

The major surface-water drainage basins are the Owens Valley Basin in which streams flow toward the Owens River, and the Mono Basin in which streams flow toward the Mono Lake. A LANDSAT image of the area (Figure 2-2) shows the drainage network. Most perennial streamflow in both basins originates on the eastern slope of the Sierra Nevada. In other locations in the EIS area, streams are mostly intermittent or ephemeral. All streams are generally short and the magnitude of runoff, measured as quantity of runoff per unit area of watershed, decreases north to south (Department of Water Resources, 1960).

Streamflow in most of the perennial streams has been monitored by the Los Angeles Department of Water and Power (LADWP) and the U.S. Geological Survey (USGS) for several years. Mean streamflows range from less than 1 cubic foot per second (cfs) at Carrol, Diaz, and Thibaut Creeks to 45 cfs at Pine Creek. For those perennial and intermittent streams which are not continuously monitored by LADWP or USGS, the best records available are a single estimate of streamflow at the time the stream was surveyed by BLM. Few flow measurements from springs are available.

Very little water-quality data are available for the EIS area. Water quality has been tested by the California Department of Water Resources (DWR), LADWP, and the BLM but tests of most streams have been conducted very rarely or only once. Water-quality constituents fluctuate daily, seasonally, and with changes in land management practices. Since these flucuations are not apparent without repeated sampling, the available data only describe water quality at a specific point in time.

There is evidence that stream-water quality is being impacted by various land management practices in the EIS area; Marble and Ash Creeks are among those impacted by grazing.

Sediment in streams can increase as a result of grazing. The stream channel stability rating assigned to each stream reflects indirectly the extent of sediment detachment and transport. Ratings of "poor" or "fair" may indicate that grazing, in part, causes greater bank instability. Montgomery and Deep Canyon Creeks and North Fork of Lubkin Creek were rated as "poor," 18 streams were rated as "fair," and 15 streams were rated as "good" (Appendix H).

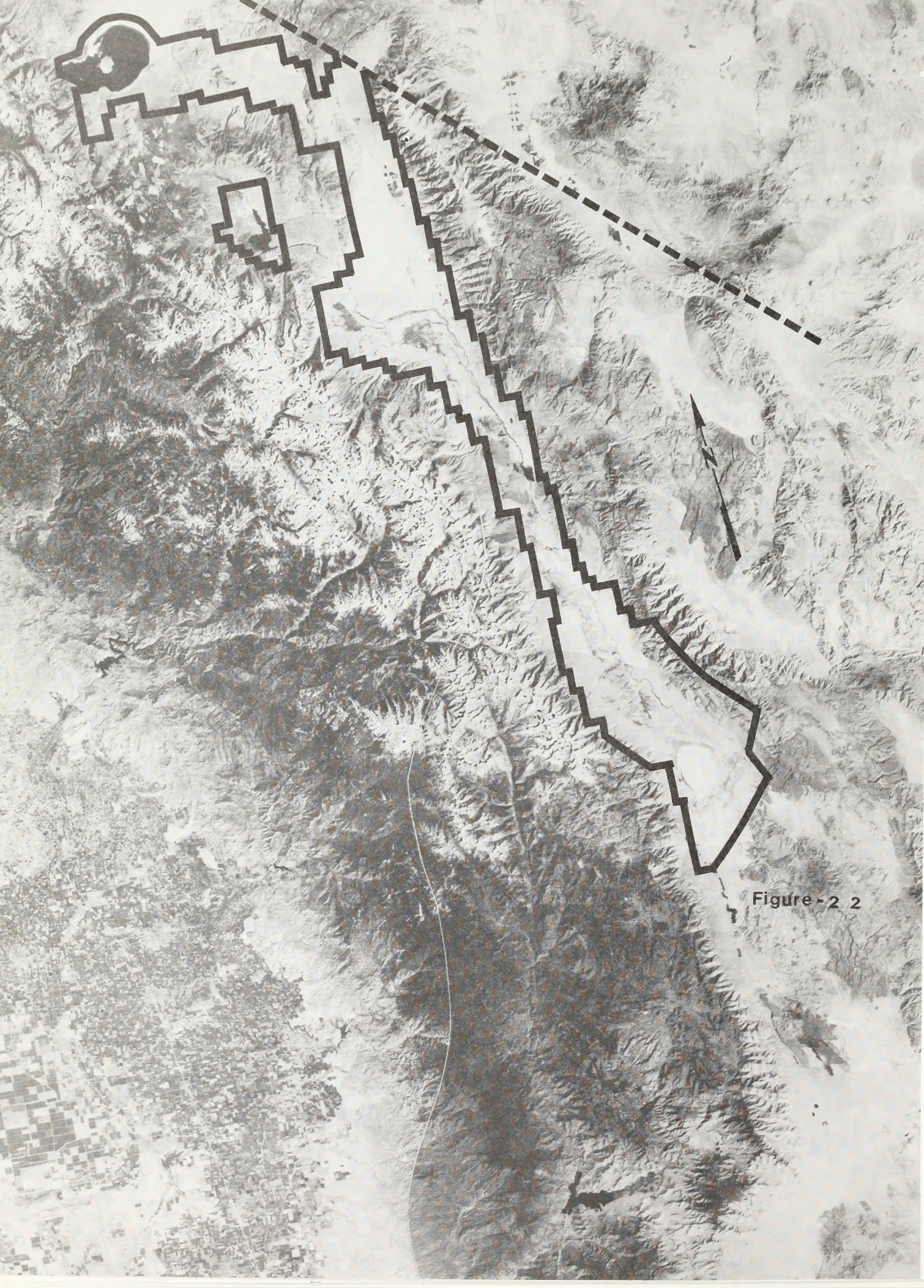


Figure - 2 2

VEGETATION

The description of vegetation of the EIS area is based primarily on inventories completed in 1978. Methods of data collection are described in Appendix B. The data are on file at the Bishop Area Office. The evaluation of range trend is based on 10 photo plots established in 1967 on the Wells Meadow and Adobe Valley Allotments, 23 permanent line transects established in 1955 on four allotments in the Benton Planning Unit, and the professional judgment of field personnel.

Range Condition and Trend

Within the EIS area there are 199,730 acres (37%) in "good," 265,053 acres (49%) in "fair," and 73,449 acres (14%) in "poor" ecological range condition. Current conditions by habitat type are shown in Table 2-2. Current conditions by allotment are shown in Table 3-4.

Good-condition ranges contain more than 50 percent of the climax plant community, with key forage species making up a significant proportion of the total production. Plant cover is adequate to maintain site stability.

Fair-condition ranges have 26-50 percent of the climax community with key species present but in quantities lower than the site's potential. Most fair-condition ranges in the EIS area have reduced plant cover but, due to rapid soil permeability and low precipitation levels, are stable.

Poor-condition ranges have 0-25 percent of the climax community intact. Key forage species, if present at all, are unavailable to grazing animals. Total productivity of the site may be far below potential. Plant cover is much reduced.

The current range conditions in the EIS area are the result of historical grazing prior to enactment of the Taylor Grazing Act of 1934.

The apparent trend of the range, as observed by field personnel during 1978, is static on all allotments except the Adobe Valley Allotment. The reliability of this evaluation is low, however, since measurements of range condition must be made at two points in time to accurately determine trend. The data obtained from reading the permanent line transects established in 1955 were inconclusive because many of the transects were located in areas which later received brush control treatments. Photo plots established in the Adobe Valley Allotment in 1967 prior to implementation of rest-rotation grazing management indicate an upward trend in range condition over a period of 10 years.

Forage Production

Total annual production for the area is 19,232 AUMs of livestock forage and 5,194 AUMs of wildlife forage. Wildlife forage was computed only on areas of known use by Tule elk and mule deer. Livestock forage was computed only on areas suitable for livestock use. A conflict exists between livestock and wildlife due to directly

TABLE 2—2
HABITAT TYPE CHARACTERISTICS

Habitat Type	Total Acres (% of EIS Area)	Acres by Condition Class		Key Forage Plant Species 1/	Soil Association 2/	Corresponding Ecological Range Site (precip. zone) 3/
Alkali Meadow	5377 (1.0%)	Good Fair Poor	1503 2307 1567	Inland Saltgrass (Distichlis Stricta)	1A Playa-Aquic Udorthents - Xerofluvents Association	Alkali Wet Meadow 8-12" p.z. Alkali Ashy Sand 8-12" p.z.
Alkali Sink Scrub	6816 (1.3%)	Good Fair Poor	5718 567 531	None	1B Gila-Vinton-Playa Association	Alkali Sand 4-6" p.z.
Great Basin Saltbush Scrub	16752 (3.1%)	Good Fair Poor	6792 8934 1026	Allscale (Atriplex polycarpa)	1B Gila-Vinton-Play Association 5A Yermo-Durorthids-Cajon Association.	Sandy 4-6" p.z. Arid Loam 4-6" p.z.
Shadscale Scrub	130371 (24.2%)	Good Fair Poor	58386 64384 7601	Shadscale (Atriplex confertifolia) Four wing Saltbush (Atriplex canescens)	2A Torriorthents - Haplagids - Schawana Association 3A Honova-Chidago-Hammil Association 5A Yermo-Durorthids-Cajon Association	Gravelly Loam 4-6" p.z. Rocky Loamy Sand 6-8" p.z. Upland Arid Loam 4-6" p.z.
Great Basin Big Sagebrush	81303 (15.1%)	Good Fair Poor	15129 24042 42132	Indian ricegrass (Oryzopsis hymenoides) Desert needle-	3B Sherwin-Kamu Association 4B Eboda-Sawavu-Bentonhot Association 5C Searles - Beverly - Toll Association	Granitic Fan 6-8" p.z. Sandy 8-10" p.z. Shallow Loamy Sand 10-14" p.z.
Great Basin Big Sagebrush/bitterbrush	93812 (17.4%)	Good Fair Poor	31010 55054 7748	Desert bitterbrush (Purshia glandulosa Antelope bitterbrush (Purshia tridentata) Desert Needlegrass (Stipa Speciosa)	2C Zono-Cowtrack Association 4A Onom-Dystric Xerorthents Association 5C Searles-Beverly-Toll Association	Ashy Loamy Sand 10-14" p.z. Deep Ashy Sand 10-12" p.z. Gravelly Sand 10-12" p.z. Granitic Fan 8-10" p.z.
Mixed Desert Shrub	111584 (20.7%)	Good Fair Poor	15617 91302 4665	Desert needlegrass (Stipa Speciosa) Spiny hopsage (Grayia Spinosa)	2A Torriorthents-Haplargids - Rock Outcrop Association	Loamy Sand 6-8" p.z. Cindery Loamy Sand 4-8" p.z.
Blackbrush Scrub	25752 (4.8%)	Good Fair Poor	5093 13785	Desert needlegrass (Stipa Speciosa)	5B Xeric Torriorthents - Xeric Haplargids - Dunmovin Association	Shallow Loamy Sand 6-8" p.z.
Nevada Pinyon-Juniper	47863 (8.9%)	Good Fair Poor	42986 3571 1306	Antelope Bitterbrush (Purshia tridentata) Indian ricegrass (Oryzopsis hymenoides)	2B Torriorthents - Haplargids - Schawana Association 2D Ortheints - Xerolls Rock outcrop Association	Steep Sandy Slope 8-10" p.z. Rocky Loam 8-12" p.z. Rocky Loam Benches 8-12" p.z. Mahogany slope 10-14" p.z.
Mojave Creosote Bush Scrub	11988 (2.2%)	Good Fair Poor	11437 551 0	Indian ricegrass (Oryzopsis hymenoides) Annual forbs	5A Yermo - Durorthids - Cajon Association	Arid Limy upland 4-6" p.z.
Subalpine Sagebrush	2925 (0.5%)	Good Fair Poor	2925 0 0	None	2D Orthents - Xerolls Rock Outcrop Association	Subalpine Sagebrush 8-10" p.z.
Subalpine Forest	1260 (0.2%)	Good Fair Poor	1260 0 0	None	2D Orthents - Xerolls-Rock Outcrop Association	Subalpine Forest 8-10" p.z.
Alkali Marsh	123 (0.02%)	Good Fair Poor	123 0 0	None	Various	Alkali Marsh 8-12" p.z.
Northern Juniper Woodlands	471 (0.08%)	Good Fair Poor	0 471 0	Indian ricegrass (Oryzopsis hymenoides)	4A Onom - Dystric Xerorthents Association	Sandy Juniper Flatt8-12" p.z.

1/ Key livestock forage plants.

2/ Soil Associations are according to the uncorrelated soil series names shown on Map 2

3/ Ecological range site characteristics and conditions by range site for each allotment are shown in Appendix

overlapping diets and areas of use in the following amounts: 207 AUMs between livestock and mule deer, 73 AUMs between livestock and Tule elk, and 167 AUMs between livestock and wild horses. Conflicts between elk and deer or between wild horses and deer are negligible.

The productivity of individual habitat types is highly variable, ranging from a high of 1,600 pounds per acre on an alkali meadow in a 10-12 inch precipitation zone to a low of 100 pounds per acre in alkali sink scrub in a 4-6 inch precipitation zone.

Habitat Types

Vegetation of the study area was classified into 14 vegetation types or "habitat types" based on the dominant plant species. The classification system is patterned after "An Annotated List of California Habitat Types" (Cheatham, 1975). Ten habitat types are affected by grazing and are discussed separately below. The four remaining habitat types, due to their location or limited extent are not impacted by grazing. Characteristics of the habitat types are outlined in Table 2-2. Figure 2-1 shows the dates of phenological stages for key species in an average year. Vegetation by habitat type is shown on Map 2-1 (inside back cover).

1. Alkali Meadow (5,377 acres)

This habitat occupies the shorelines and poorly drained bottoms of closed basins. The dry phase is dominated by inland saltgrass and rubber rabbitbrush. The moist phase is dominated by sedge and inland saltgrass. Its principal forage value is for livestock during summer and fall.

2. Great Basin Saltbush Scrub (16,752 acres)

This habitat occurs on the floor of the Owens Valley. It is dominated by allscale, shadscale, and burrobrush. It is a low-producing site which has a low value for livestock during the winter months.

3. Alkali Sink Scrub (6,816 acres)

This habitat also occurs on the floor of the Owens Valley. It is dominated by inkweed, Perry's saltbush, and a sparse cover of saltgrass. It has a very low value for livestock grazing.

4. Shadscale Scrub (130,371 acres)

This extensive habitat type includes several distinct plant communities associated with the varied soils. The habitat type is dominated by shadscale, fourwing saltbush, Nevada ephedra, and blue dalea. The high protein content of the shrubs provides excellent livestock forage in winter and spring. In years of above-normal rainfall, a dense understory of annual forbs provides succulent forage for spring livestock grazing.

5. Mojave Creosote Bush Scrub (11,988 acres)

This habitat type is located primarily on alluvial fans at the base of the Inyo Mountains. It is dominated by creosote bush and shadscale. No livestock use is licensed in the habitat due to the low production and lack of water.

6. Mixed Desert Shrub (111,584 acres)

This large habitat type occurs on alluvial fans of the Sierra and the White Mountains. The plant composition is highly variable. Important members of the shrub component include spiny hopsage, Nevada ephedra, blackbrush, Cooper's goldenbush, and California buckwheat. Its value for grazing varies according to the plant composition, with spiny hopsage, Nevada ephedra and California buckwheat being the most valuable plants.

7. Great Basin Big Sagebrush (81,303 acres)

This habitat type occurs primarily in the large valleys and alluvial fans of the northern portions of the EIS area. It is dominated by sagebrush and desert needlegrass or Indian ricegrass. Its principal value for grazing animals is derived from the herbage provided by the grasses during late spring and summer.

8. Great Basin Big Sagebrush-Bitterbrush (93,812 acres)

This habitat type occurs primarily in the mountains and upper portions of the alluvial fans. It is found in a higher precipitation zone than the Great Basin big sagebrush habitat type. This habitat type is dominated by antelope and/or desert bitterbrush, big sagebrush, and varying species of needlegrass, depending upon climatic factors. Its primary value for grazing is in late summer and fall for livestock and winter for mule deer. Most of the deer winter range occurring within the EIS area is found in this habitat type. About 33 percent of the habitat is in "good," 59 percent in "fair," and 8 percent in "poor" ecological condition. The trend of browse condition on 7,693 acres of this habitat occurring within the winter range of mule deer is declining due to heavy deer use in excess of the range's carrying capacity.

9. Blackbrush Scrub (35,753 acres)

This habitat type is found on the alluvial fans of the Sierras. It often intergrades with the mixed desert shrub habitat. Monotypic stands of blackbrush completely devoid of herbaceous species dominate much of the habitat type. In this stage it has little or no grazing value.

10. Nevada Pinyon-Juniper Woodland (47,863 acres)

This habitat type is located on mountain slopes primarily. Tree cover varies from sparse open stands to dense closed stands. Much of the area is unsuitable for livestock grazing due to the steep, rocky slopes. Grazing by mule deer depends primarily upon the bitterbrush in the understory. Approximately 90 percent of the habitat is rated in a "good" ecological condition.

Unsuitable Range

Approximately 100,000 acres of range unsuitable for livestock grazing exist in the EIS area. This range is unsuitable for a variety of reasons including steep slopes, excessive rocks, or inadequate water. In addition, about 28,000 acres currently unalloted due to lack of adequate highway fencing and water developments are potentially suitable for livestock grazing.

Threatened and Endangered Plants

No federally listed threatened or endangered plant species are known to occur within the EIS area, however, nine candidate threatened or endangered plant species occur within the area. These nine species are contained in a draft Federal Register "Notice of Review" prepared by the Sacramento Endangered Species Office of the U.S. Fish and Wildlife Service 1980. Table 2-3 shows the probable allotments and known habitats in which these species occur. Under BLM policy these plants are afforded the full protection of the Endangered Species Act of 1973, as amended (16 USC 1531, et. seq.). General locations are depicted on Map 2-2. A brief discussion of each species is given below. The BLM policy further states that all California Native Plant Society (CNPS) "list two species" and U.S. Fish and Wildlife Service (FWS) "species of concern" must be considered in all BLM planning documents. In the EIS area the following such species occur: Astragalus monoensis, Chrysothamniss parryi ssp. bolanderi, Eriogonum eremicola, Hackelia brevicula, Loeflingia squarrosa ssp. artemisiarum, Lupinusdalesiae, and Perityle inyoesis.

1. Mono Buckwheat (Eriogonum ampullaceum)

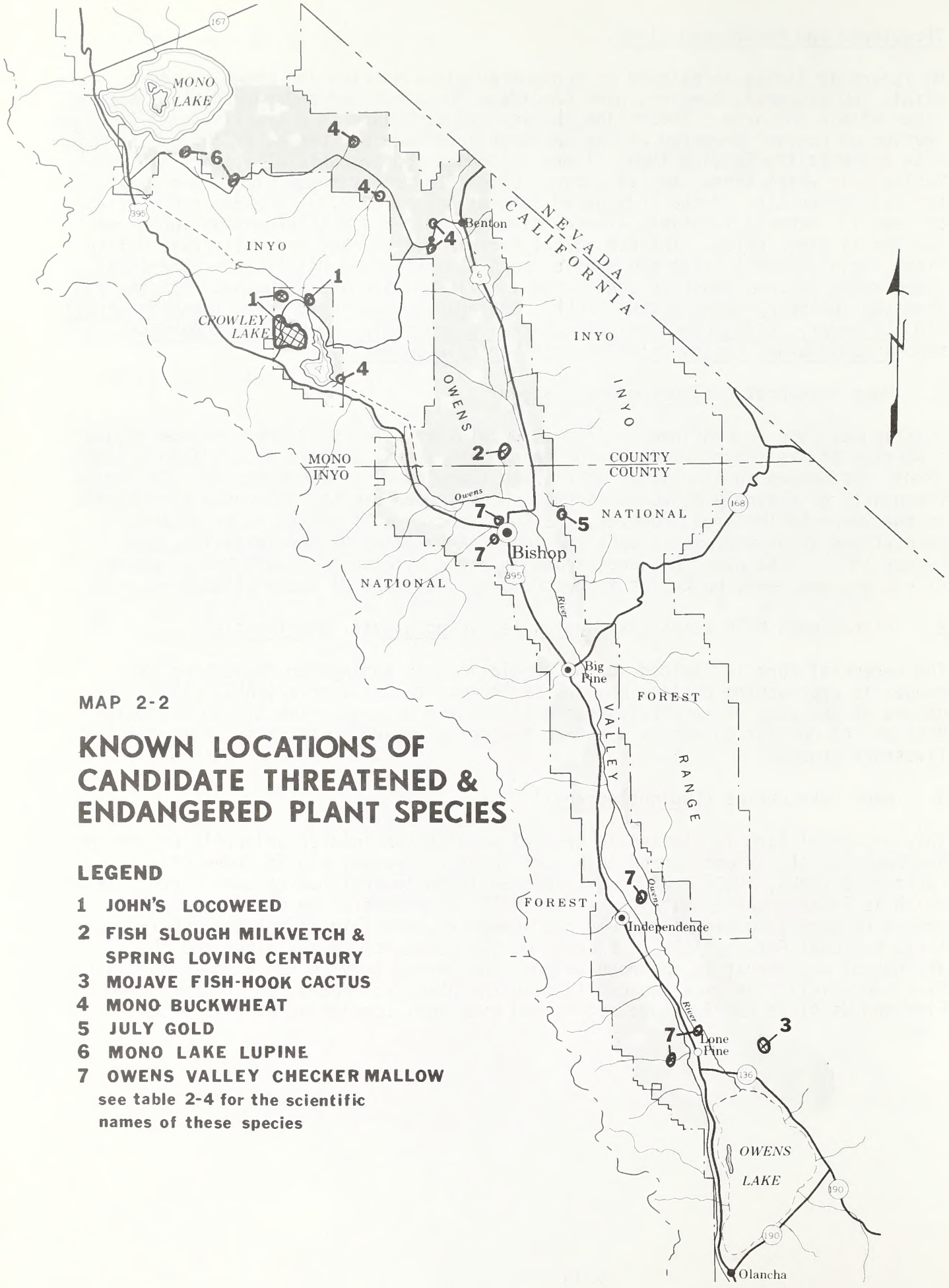
This annual forb is confined to several populations, is considered endangered over a portion of its range, is declining in number, and is endemic to California (CNPS, 1980). It occurs on ashy soils which have loamy sand surface textures. It occurs frequently on recently disturbed sites. Heavy sheep use has destroyed some plants in the Adobe Valley area; however, the locations as well as the vigor of the populations is depend mostly upon the amount and timing of precipitation, (De Decker 1978). The plant has been found in eight allotments (Table 2-3); however, within any one year, buckwheat may occur on all or none of these allotments.

2. Fish Slough Milk-Vetch (Astragalus lentiginosus var. piscinensis)

The perennial forb is limited to one population, is endangered throughout its range, is approaching extinction, and is endemic to California (CNPS, 1980). It occurs at the edge of an alkali meadow within the proposed Fish Slough Allotment. Most of the population occurs within a fenced exclosure where it is protected from livestock grazing.

3. Mono Lake Lupine (Lupinus duranii)

This perennial forb is limited to several populations located primarily on the Inyo National Forest, is endangered in a portion of its range, and is endemic to California (CNPS, 1980). It occurs abundantly on several pumice sand flats, one of which is located partly within the Mono Mills Allotment. The plant is avidly grazed by sheep, however this does not appear to adversely affect the population (Inyo National Forest, 1979). Because of the abundance of the plant and the absence of any threat to the populations, the Forest Service has recommended to the Fish and Wildlife Service against listing the plant as endangered or threatened. Fish and Wildlife Service have not agreed with this conclusion at this date.



MAP 2-2

KNOWN LOCATIONS OF CANDIDATE THREATENED & ENDANGERED PLANT SPECIES

LEGEND

1 JOHN'S LOCOWEED
2 FISH SLOUGH MILKVETCH & SPRING LOVING CENTAURY
3 MOJAVE FISH-HOOK CACTUS
4 MONO BUCKWHEAT
5 JULY GOLD
6 MONO LAKE LUPINE
7 OWENS VALLEY CHECKER MALLOW

see table 2-4 for the scientific names of these species

TABLE 2—3
CANDIDATE THREATENED AND
ENDANGERED PLANT SPECIES

Common Name	Scientific Name	Probable Allotment Locales	Dates of Flowering	Other Known Locales	Habitat	Elevation
John's Locoweed	Astragalus johannis var. howellii	Wilfred Creek (6022) Hot Creek (6018) Long Valley (6044)	June - July	INF LADWP	Sagebrush	6 - 7000
Fish Slough Milkvetch	Astragalus lentiginosus var. piscinensis	Fish Slough (0004)	June	LADWP	Shadscale	4 - 5000
Mojave Fishhook Cactus	Sclerocactus polyancistrus	S. Inyo Mountains (unalloted)	April - June	CDCA; INF	Several	2 - 7000
Mono Buckwheat	Eriogonum ampullaceum	Mono Mills (6055) Bramlette (6038) Adobe Valley (6027) Symon (6037) Mathieu (6026) Granite Mtn. (6034) Casa Diablo (6081) Long Valley (6017)	July	INF	Sagebrush	5 - 7000
July Gold	Dedeckera evrekensis	Poleta Canyon (6031)	July	CDCA	Shadscale	4 - 6000
Spring-Loving Centaury	Centaurium namophilum	Fish Slugh (0004)	May - June	LADWP	Alkali seep	4000
Mono Lake Lupine	Lupinus duranii	Mono Mills (6055)	June - July	INF	Sand Flat	6 - 8000
Owens Valley Checker Mallow	Sidalcea coville	Alabama Hills (6046) Keough (0001)	June	LADWP	Alkali Meadow	4 - 6000
Hanaupah Laphamia	Perityle villosa	Inyo Mountains (unalloted)	Unknown	Unknown	Unknown	

4. John's Locoweed (Astragalus johannis-howellii)

This perennial forb is limited to a few highly restricted populations, is endangered throughout its range, is approaching extinction, and is endemic to California (CNPS, 1980). The plant is highly palatable to cattle and has been grazed during the last 70-100 years. In order to determine the impact of sustained grazing on this species, BLM has initiated a study of the populations which will monitor density, age structure, seedling survival, utilization, and phenological development. In addition, the City of Los Angeles, Department of Water and Power, has installed protective exclosures in the Wilfred Creek and the Long Valley Allotments to monitor the effects of grazing on the plant. The BLM will use this information in developing future management recommendations for the plant.

5. July Gold (Dedeckera eurekensis)

This perennial shrub is rare but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time. It is endangered in a portion of its range, is declining in number, and is endemic to California (CNPS, 1980). This plant has recently been found on a dolomitic soil within the Poleta Canyon Allotment. The palatability of the plant to livestock is unknown, but utilization by grazing animals has not occurred, probably due to the rocky soil, lack of stockwater, and presence of undesirable shrubs in the surrounding plant community.

6. Mojave Fish-Hook Cactus - (Sclerocactus polyancistrus)

This perennial cactus is rare but found in sufficient numbers and distributed widely enough that the potential for extirpation is low at this time. It is endangered in a portion of its range, is declining in number, and is rare outside California. It is found in the Inyo Mountains, which are not currently licensed for livestock use due to steepness of slope and lack of potential for stock-water development.

7. Spring-Loving Centaury (Centaurium namophilum)

This annual forb is confined to several populations, is endangered in a portion of its range, is declining in number, and is rare outside California. It occurs on steep areas with alkali meadow-type vegetation. The palatability of the plant to livestock is unknown; however, a significant portion of the population located in the Fish Slough Allotment occurs within a fenced exclosure where it is protected from livestock grazing.

8. Owens Valley Checker Mallow (Sidalcea covillei)

This annual forb occurs within the EIS area but has not been found on public lands due to the plant's heavy dependence on ground water. The only suitable habitat for the plant is on the City of Los Angeles Department of Water and Power lands.

9. Hanaupah laphamia (Perityle villosa)

This species has not been found since 1935 and we have no information about its range or distribution.

WILDLIFE

The information presented below was developed through wildlife inventories conducted in the EIS area during 1978. The Emlen technique (Emlen, 1977) was used to assess breeding bird use of the area. Extensive rodent trapping was conducted also. Other vertebrate wildlife inventories were less intensive. Data on wild ungulates were already available through the Owens Valley Tule Elk Habitat Management Plan and California Department of Fish and Game.

Ungulates

Two species of large ungulates occur in the EIS area, mule deer and Tule elk. Use by allotment for these species is detailed in Table 2-4.

Mule Deer -

Seven distinct herds occur within the EIS area; they primarily use public lands during the winter (Map 2-3 outlines herd boundaries). Four of these herds, the Sherwin Grade, Buttermilk, Goodale, and Monache, migrate from the Sierra Nevada crest into the Owens Valley. The Inyo Mountain herd is restricted at all seasons to the Inyo Mountains. The Casa Diablo and Mono Lake herds migrate into the foothills of the Casa Diablo, Benton, and White Mountains. Current browse conditions for deer are summarized in Table 1-7. Due to habitat and other ecological similarities shared by certain of these herds they will be discussed as composite units:

1) Sherwin Grade, Buttermilk, Goodale Herds

These herds use about 63,000 acres of public land (plus 116,000 acres of other lands) as winter range. Although the public land is only about 35 percent of the total winter range, it is estimated that more than 50 percent of deer winter use is on these lands. These herds (estimated at 6,500 deer) summer along the western Sierra Nevadas and migrate in the fall to the winter range, which receives approximately 150 days of use.

Winter ranges occur in the 4,000-6,000 foot elevation zone in a Great Basin vegetation type characterized by bitterbrush, rabbitbrush, Mormon tea, sagebrush, and bunchgrasses. The primary forage species is bitterbrush which forms the bulk of the diet in early winter. A shift to big sagebrush in late winter and forbs and grasses in spring normally occurs. Studies indicate that 77 percent of bitterbrush is heavily hedged throughout the range. Bitterbrush in many areas is decadent; in several areas the growth form has been altered to tall, tree-like plants whose forage is unavailable to deer. Studies also indicate low levels of bitterbrush seedling establishment over the past two to three decades. The forage required to support existing use by the Sherwin herd in the Wells Meadow and Sherwin Allotments exceeds the estimated available forage by 878 AUMs. Demand by the Buttermilk herd

TABLE 2—4
MULE DEER, TULE ELK AND SAGE GROUSE
DATA BY ALLOTMENT

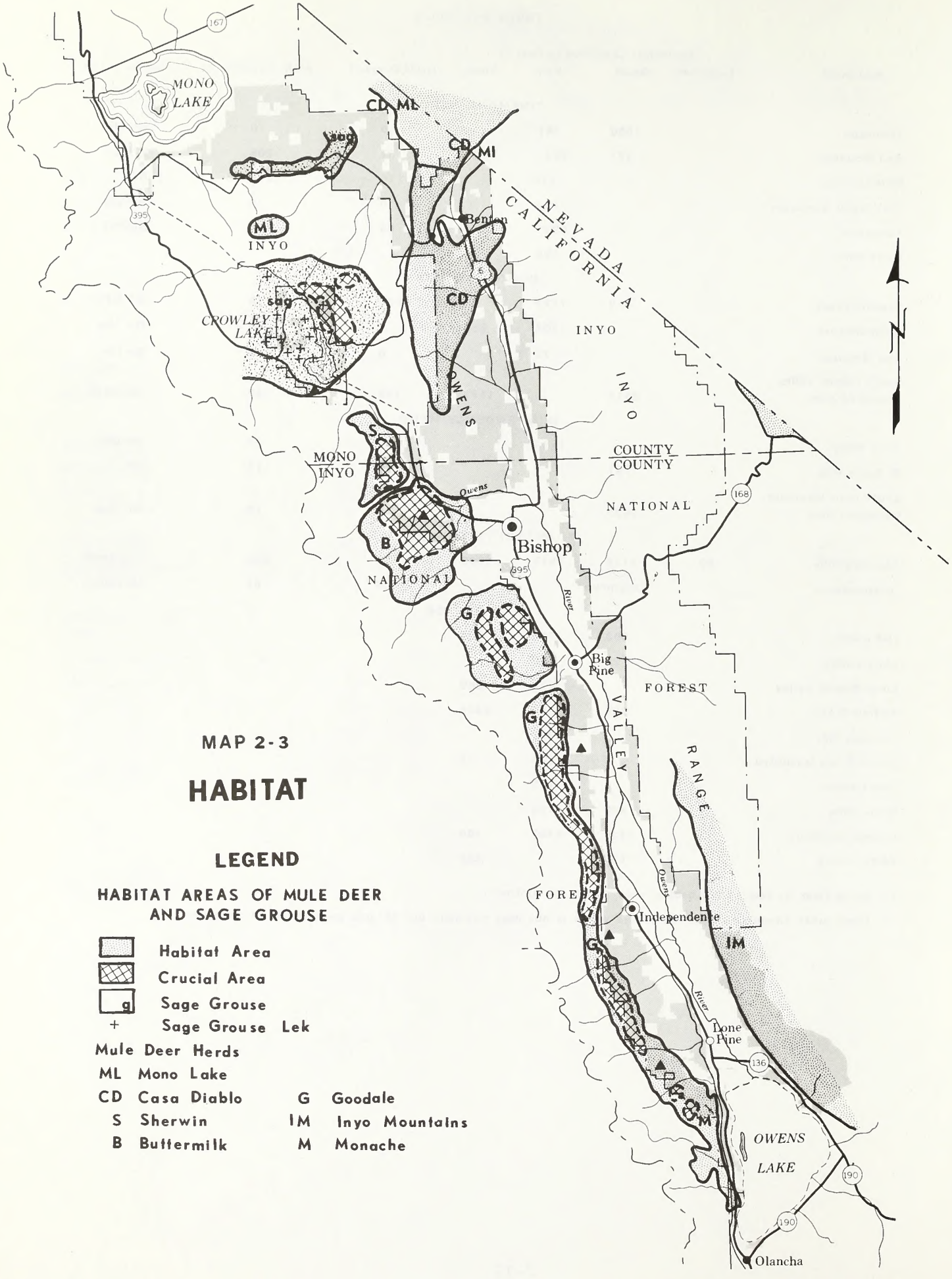
Allotment	Ecological Condition (Acres) 1/ Excellent	Good	Fair	Poor	AUM Demand	AUM Available 2/	Season of Use
			MULE DEER				
			CASA DIABLO HERD				
Volcanic Tablelands	55	2554	2950		15	100	WT/SP
Hammil Valley			15382		271	518	WT/SP
Marble Creek		2019	4667	1436	200	349	WT/SP
Bramlette		4469	1055	7312	98	413	WT/SP
Adobe Valley		420			1	17	WT/SP
New			5107		12	24	WT/SP
			MONO LAKE HERD AND CASA DIABLO				
Bramlette			622	1746	61	61	WT/SP
Adobe Valley		475			1	15	WT/SP
			SHERWIN HERD				
Sherwin		252	1086	473	526	110	WT/SP
Wells Meadow		70	1193		527	65	WT/SP
Unalloted		286	624				
			BUTTERMILK HERD				
Round Valley		1639	2466	1163	824	449	WT/SP
Bishop Unalloted		2899	4099		98	98	WT/SP
			GOODALE HERD				
Shannon Canyon/ Baker Creek		1642		366	159	97	WT/SP
West Crater Mountain	60		886		45	49	WT/SP
Red Mountain		640	489		34	47	WT/SP
Sawmill Creek		130	1247		157	44	WT/SP
Independence		170	3943	620	59	273	WT/SP
Alabama Hills		940	2587		40	143	WT/SP
George Creek		2338	814		60	136	WT/SP
			MONACHE HERD				
Alabama Hills		134	2520		40	48	WT/SP
			INYO MOUNTAIN				
South Inyo Mtn. Unalloted Area	7822	10214			380	511	Yearlong
			TULE ELK				
			BISHOP HERD				
Owens Valley Comm		320	318		6	8	SP/SU
Poleta		1873	208		15	27	SU
Owens Valley		1872	145		33	40	SP
Zurich	176	3528	671		195	267	WT/SP

TABLE 2—4 Cont'd.

Allotment	Ecological Condition (Acres) 1/ Excellent	Good	Fair	Poor	AUM Demand	AUM Available 2/	Season of Use
TINEMAHA HERD							
Tinemaha		1850	961		0	70	No Use
Red Mountain		377	2927		37	206	WT/SP
Poverty Hills			170		170	116	SP
East Crater Mountain			195		0	0	No Use
Aberdeen			4279		65	131	SU/WT
Black Mine			495				
GOODALE HERD							
Sawmill Creek		610	1472		109	33	WT/SP/F
Independence			1508	550	0	23	No Use
Red Mountain			75		0	5	No Use
South Owens Valley Unalloted Area		2515		1183	169	89	Yearlong
INDEPENDENCE HERD							
Black Mine			1133		0	21	No Use
W. Santa Rita		761			10	11	SP
South Inyo Mountain Unalloted Area		2623			0	15	No Use
MT' WHITNEY HERD							
Alabama Hills	90	2178	7915	1805	60	346	Unknown
Independence		Unknown			6	61	Unknown
SAGE GROUSE							
Hot Creek		993	4728	428			
Long Valley		25	100				
Little Round Valley			176	200			
Wilfred Creek		855	1665	4445			
Tobacco Flat			304				
Hilton Creek Unalloted			249	15			
Casa Diablo			1102				
Mono Mills		880	120				
Granite Mountain		3320	2340	400			
Adobe Valey		120		450			

1/ Acres refer to deer or elk habitat only within an allotment.

2/ Many areas provide a surplus of forage which is not used normally due to area preferences by ungulates.


MONO LAKE
CD
ML
MI
Benton
NEVADA
CALIFORNIA
ML
INYO
CROWLEY LAKE
sag
CD
INYO
INYO
OWENS
MONO
INYO
COUNTY
COUNTY
NATIONAL
Owens
River
Bishop
B
NATIONAL
G
Big Pine
VALLEY
FOREST
RANGE
Owens
River
Independence
IM
FOREST
G
M
Lone Pine
OWENS LAKE
Olancha
MAP 2-3
HABITAT
LEGEND
HABITAT AREAS OF MULE DEER AND SAGE GROUSE
Habitat Area
Crucial Area
g Sage Grouse
+ Sage Grouse Lek
Mule Deer Herds
ML Mono Lake
CD Casa Diablo
S Sherwin
B Buttermilk
G Goodale
IM Inyo Mountains
M Monache

in the Round Valley Allotment exceeds forage availability by 375 AUMs (Table 2-4). Hedging, lack of seedling establishment, and excessive use by deer have resulted in the unsatisfactory condition and downward trend on much of the winter range of these herds.

2) Monache Herd

This herd is located in the southern end of the EIS area in habitat much like that described above. Only a small number of deer from this herd use public lands during winter and then only in years with a great deal of snow. Detailed information on this herd is lacking.

3) Inyo Mountain Herd

This herd is confined primarily to the higher elevations in the Inyo Mountains. Primary forage species are mountain mahogany, desert ceanothus, and cliffrose.

Although the Inyo Mountains are believed to have been heavily grazed by sheep in the early part of the century, no use by livestock is known to have occurred since the 1940s and the present condition of the range is satisfactory. Sufficient data are not available to define numbers, seasonal use areas, etc.

4) Casa Diablo and Mono Lake Herds

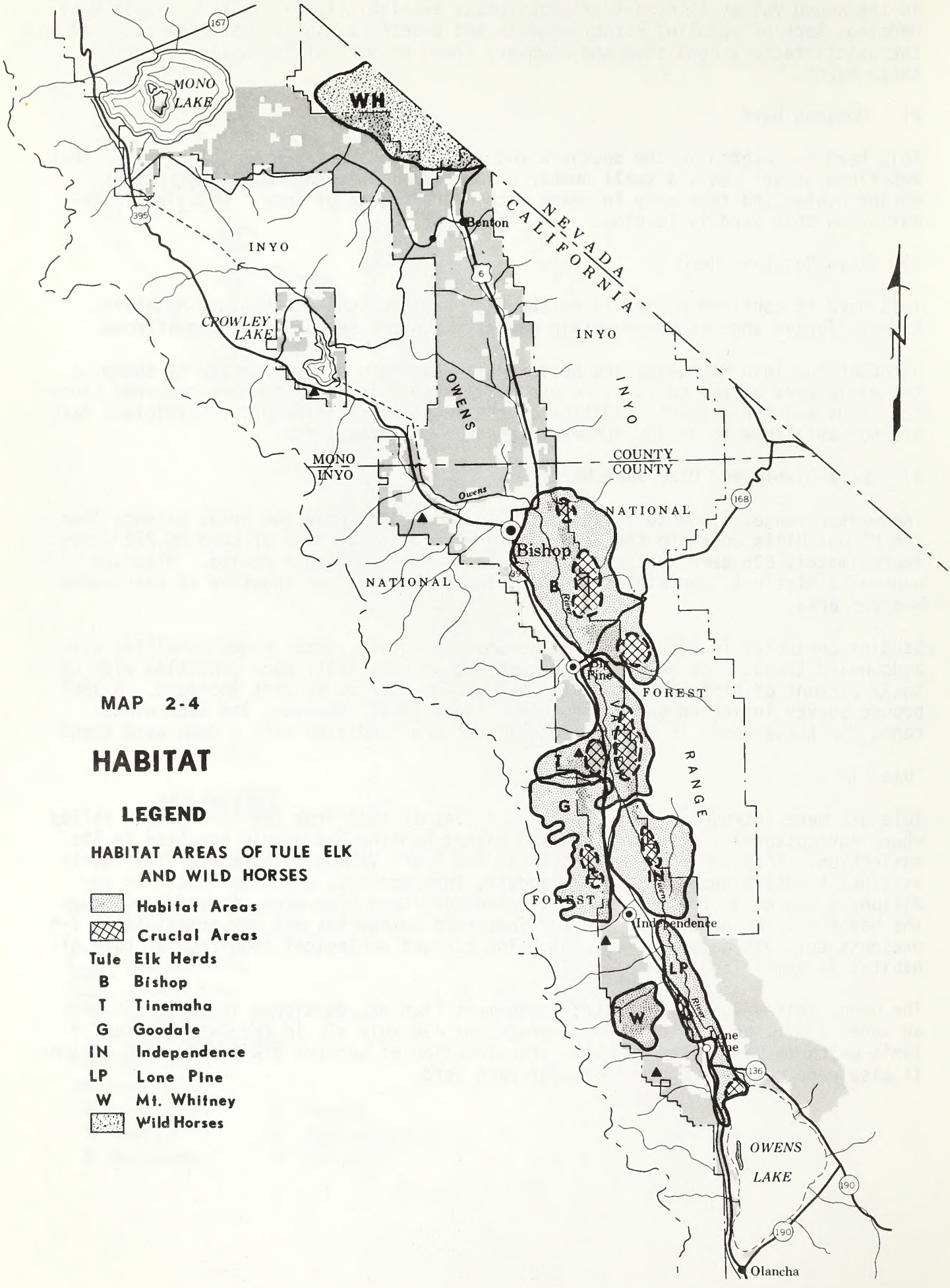
The winter range, 5,000 to 7,500 foot elevation, for those two herds extends from the Pizona Hills south to the Casa Diablo Mountains, an area of some 86,272 acres. Approximately 825 deer winter on public lands over a 5-month period. Although generally distinct, certain elements of these herds winter together in the Truman Meadows area.

Studies conducted in 1963 indicated an unsatisfactory winter range condition with a downward trend. The Marble Creek area was in especially poor condition with up to 77 percent of bitterbrush heavily hedged and over 50 percent decadent. A 1967 browse survey indicated some improvement since 1963. However, the deer winter range for these herds is still in unsatisfactory condition with a down ward trend.

Tule Elk -

Tule elk were introduced into the Owens Valley in 1933 from the San Joaquin Valley where agricultural land conversion and market hunting had nearly resulted in its extinction. They now roam the length of the Owens Valley. There are five fairly distinct herds: Bishop, Tinemaha, Goodale, Independence, and Lone Pine. In addition, a new herd, forming in the Independence/Lone Pine area, is referred to as the Mount Whitney herd. Map 2-4 outlines herd boundaries and use areas; Table 2-4 presents tule elk data by allotment. The current ecological condition of tule elk habitat is summarized in Table 1-7.

The Owens Valley Tule Elk Habitat Management Plan was developed in 1977. It sets an upper limit, on the long-term average, of 490 tule elk in the Owens Valley, a limit which is maintained through translocation of surplus elk to new reservations. It also recommends an upper limit for each herd.



MAP 2-4

HABITAT

LEGEND

HABITAT AREAS OF TULE ELK AND WILD HORSES

- Habitat Areas
- Crucial Areas

Tule Elk Herds

- B Bishop
- T Tinemaha
- G Goodale
- IN Independence
- LP Lone Pine
- W Mt. Whitney

- Wild Horses

1) Bishop Herd

The Bishop herd uses 14,080 acres of public land (plus 62,720 acres of private land) which consists primarily of two habitat types, shadscale scrub and Great Basin saltbush scrub. The recommended carrying capacity for this herd is set at 80-100 animals.

During the summer the cows are found in the bottomlands near water. In later summer and early fall, bulls and cows join for the rut. Afterwards, some bulls leave the herd to winter in the foothills of the White Mountains. The herd, however, moves south to winter in the bottomlands. In late February and early March the cows disperse into isolated canyons, usually on public lands, to calve.

Approximately 70 percent of the herd range is grazed by livestock.

2) Tinemaha Herd

There are approximately 60,160 acres within the Tinemaha herd unit with 45,365 acres being public lands consisting of four major habitat types: Great Basin saltbush scrub, shadscale scrub, alkali scrub, and mixed Desert scrub. The carrying capacity for this herd has been set at 80-100 animals. This herd uses the public lands primarily for calving and wintering areas. All calving apparently takes place on public lands. Five miles of a sheep driveway passes through the herd area and conflicts have occurred in the past when sheep have been driven off the driveway during the elk calving season.

3) Goodale Herd

Through the years the herd has separated into northern and southern units. The northern group spends most of its time within about five miles of the Aberdeen resort. The southern group occupies the area between Oak and Thibaut Creeks. The herd occupies approximately 44,000 acres, 15,000 of which are in the EIS area. These acres are administered primarily by the City of Los Angeles and the U.S. Forest Service. The predominant habitat is mixed desert scrub. The recommended number set for this herd is 50-70 animals.

Many areas used by this herd thoroughout the year are extremely critical, for example, Goodale Lava Flow, Goodale Creek, and the area between Thibaut and Oak Creeks. Specific calving areas for the northern group are located throughout the Goodale Lava Flow, while the southern group moves into the canyons of the Sierras to calve.

4) Independence Herd

The range of the Independence herd encompass about 36,288 acres, with only 4,672 acres on public lands. These public lands contain five habitat types: Mojave creosote bush scrub, shadscale scrub, Great Basin saltbush scrub, mixed desert shrub, and alkali sink scrub. The carrying capacity has been set at 60-80 animals.

Calving takes place either in the canyons along the Inyo Mountains or in the dense brush and willow patches on the old Owens River channel. Only about 600 out of 5,376 acres of the calving grounds are on public lands.

5) Lone Pine Herd

The range of this herd is on the valley floor from Kearsarge Road south to Owens Lake. There are no public lands within this range and thus no further discussion in this EIS.

6) Mount Whitney Herd

In January 1972 attempts were first made to establish a new elk herd in this area. These attempts failed and it was not until August 1977 that elk were reported in this area. At the present it is believed that the Mt. Whitney herd is a result of expansion by the Goodale herd.

Upland Game

There are 37 species of game birds which frequent the EIS area, 19 of which are locally or seasonally common.

The primary upland game species are sage grouse, California quail, mourning dove, and chukar. Sage grouse are particularly important in the Crowley Lake and Granite Mountain areas (Figure 2-3) where they are restricted to sagebrush habitat. Current habitat conditions for sage grouse are summarized in Table 1-7 and detailed in Table 2-4. The courtship behavior of sage grouse with its requirements for open strutting grounds and small meadows, and other spatial and vegetational needs make sage grouse particularly sensitive to grazing management practices. Other ground-nesting game birds such as quail and chukar appear to be susceptible to a lesser degree.

Quail and dove are locally abundant thoughout the EIS area. Chukar, introduced into the Owens Valley in the 1930s, are common in appropriate habitat, for example, the west slopes of the White Mountains. Ring-necked pheasant, after many years of planting, have established self-sustaining populations in the Owens Valley. Waterfowl are relatively common and abundant during the migratory season. Small numbers of a few species nest in various waters, such as, Crowley, Mono, and Adobe Lakes. A list of game species is available upon request.

There are also five species of hares and rabbits found in the EIS area. Black-tailed hares, white-tailed hares, and cottontail rabbits are commonly observed, especially in brushier areas.

Non-Game

Eight species of amphibians and 31 species of reptiles, including 17 snakes, are resident to the EIS area. All the amphibians, with the exception of the Great Basin spadefoot toad, inhabit aquatic and riparian habitat. The spadefoot is found in sagebrush and pinyon-juniper communities and only requires standing water for reproduction. The majority of amphibian habitat in the EIS area is in fair to good

condition (Appendix D). Reptiles are resident to all habitats in the EIS area. Certain species, such as chuckwalla, occur in selected habitats, whereas others, like the western-fence lizard and side-blotched lizard, occur in every major habitat.

There are approximately 241 species of non-game birds present in the EIS area at some period of the year. They are found in every habitat. Riparian habitats support the highest density of breeding birds while more structurally diverse habitats such as the Nevadan pinyon-juniper woodland support a greater diversity of species. Non-game breeding bird diversities and densities for selected habitats are shown in Table 2-5.

TABLE 2-5
BREEDING BIRD DENSITIES IN SELECTED HABITATS [1/]

Habitat	No. of Species Breeding [2/]	Breeding Pairs per 100 acres [3/]
Great Basin Big Sagebrush (untreated)	4.0	40
Great Basin Big Sagebrush (treated)	4.5	40
Shadscale	4.0	25
Mixed Desert Scrub	5.5	40
Mojave Creosote Bush Scrub	8.0	45
Willow Thickets/Northern	8.0	363
Great Basin Sagebrush-Bitterbrush	10.5	61
Marsh	12.0	212
Nevadan Pinyon-Juniper Woodland	18.5	72

1/ The figures do not include data on raptors. Breeding data on raptors was not obtained.

2/ These figures are, in some instances, based on the mean of several transects.

3/ These figures are, in some instances, based on the mean of several transects. They are extrapolations derived from calculations discussed by Emlen (1977).

Twenty-nine species of eagles, hawks, and owls inhabit the EIS area. Five of the seven diurnal raptors which nest in the area are year-long residents: golden eagle, red-tailed hawk, prairie falcon, Cooper's hawk, and American kestrel. The marsh hawk and osprey are nesters but seasonal residents. All seven species of nesting owls are year-long residents: saw-whet, long-eared, burrowing, pygmy, great-horned, screetch, and barn.

An estimated 200 acres of riparian and semi-riparian habitat provide important nesting habitat for several species of hawks. In general, however, the condition of habitat for birds of prey is unknown.

The current condition of raptor populations depends primarily upon habitat condition for prey species, an unknown factor in the EIS area.

The EIS area's small mammals range in size from the Merriam shrew to the black-tailed jackrabbit and include up to seven insectivores, five rabbits and hares, 14 bats, one marsupial, and 42 rodents.

Trapping inventories in 1978 revealed differences in rodent species' diversity between different habitats. The Great Basin big sagebrush-bitterbrush supported the highest diversity (up to 10 species) while a fairly pure stand of bitterbrush contained only four species. On a recently burned area (two years) only three species were trapped. Most habitats supported between five and eight species. Every habitat sampled revealed the presence of kangaroo rats and pocket mice. Certain habitats were preferred by particular species, for example, 95 percent of trapped rodents in the pure bitterbrush stand were deer mice.

Condition of the habitat (plant density, structural complexity, etc.,) is directly reflected in the population condition of small mammals and birds. For example, the bitterbrush stand which supports such a high density of deer mice also supports the highest density of breeding birds (exclusive of riparian habitat). These populations of rodents and birds serve as the prey base for a wide variety of predators which are thus also dependent upon habitat condition.

Carnivores play an important ecological role in wildlife communities, since predator-prey relationships must be in balance for the healthy functioning of communities. The coyote, the most abundant carnivore, occurs throughout the EIS area. Other common mammalian carnivores include the mountain lion, bobcat, and gray fox.

The habitat condition and population status of carnivores in the EIS area are unknown. The abundance of local prey species usually reflects habitat condition and inherent population cycles. The condition of predator populations is indirectly related to the habitat condition of prey populations.

Fish

Very few native fish species occur in the Benton/Owens Valley Planning Units. The endangered Owens pupfish is discussed in the Threatened and Endangered Species section. The State-listed Owens tui chub and the unlisted Owens sucker are the only other native fish in the area. The chub does not occur in waters on or near public land. The sucker occurs in several streams which flow through public land.

All other fish, (trout, bass, etc.,) are introduced. Several introduced species have self-sustaining populations. However, California Department of Fish and Game regularly plants trout, especially along the west side of Owens Valley.

The aquatic habitat on public lands is generally in fair to good condition (Appendix D). A list of the vertebrates, or any subgroup, recorded for the EIS area is available upon request.

Threatened and Endangered Species

Three federally listed and three State-listed wildlife species occur within the EIS area.

The endangered bald eagle and peregrine falcon (Federal list) are winter visitors, the latter a rarely encountered transient. Neither nest in the area. The endangered Owens pupfish (Federal list) is resident to the Fish Slough area northeast of Bishop. It is presently restricted to the Fish Slough area, two other populations having been extirpated recently.

The Owens tui chub (State-listed as endangered), although within the EIS area, is not known to occur on or near the public lands. The rare (State-listed) California bighorn sheep is known to frequent areas near public lands in Sawmill Canyon, Sherwin, and Wheeler Ridge. The rare (State-listed) California yellow-billed cuckoo, although not known to occur on public lands, uses riparian zones which are adjacent to public land.

Other listed or potentially sensitive species for which relevant data are lacking are the Panamint chipmunk, Mojave ground squirrel, and prairie falcon.

Habitats

Fourteen habitats are identified in the EIS area, ranging from Great Basin subbalpine forest to alkali sink scrub and mixed desert scrub.

Terrestrial habitat condition in this EIS refers to ecological condition, which represents the successional status of an area as compared to its natural potential or climax community (climax=excellent ecological condition). On this basis, 86 percent of the EIS area is in fair to excellent condition (Benton/Owens Valley URA III). All habitats, regardless of condition, are of value to some wildlife. However, three habitats have been identified as of particular importance to wildlife, due to high species diversity and density.

Aquatic and Riparian Habitat

The drainage pattern of the EIS area is depicted in the LANDSAT photo (Figure 2-2). The 74.5 miles of surveyed streams on public lands provide approximately 220 acres of riparian habitat.

Riparian habitat in the EIS area is typically a small but important vegetational zone, for example, it supports the highest known density of breeding birds (600 birds per 100 acres). It is found in conjunction with streams, springs, and reservoirs and supports not only that fauna peculiar to riparian areas but a wide variety of animals found also in other habitats (as many as 45 species may occur). In the EIS area riparian habitats function as oases for many species of residents and transient wildlife.

Generally riparian and aquatic habitats in the EIS area are in fair to excellent condition (ratings of aquatic and riparian habitats reflect quality rather than ecological condition). Certain areas, such as Marble Creek, have suffered varying levels of degradation. Appendix D outlines condition of streams in the EIS area.

The streams and a few small lakes also support a basically introduced fishery, a large contingent of native migratory waterfowl, and numerous arthropods, such as Mayflies, dragonflies.

Nevada Pinyon-Juniper Woodland

This habitat (25,100 acres) is primarily in the "good" ecological condition class. It has a tree overstory, shrub midstory, and grass understory and is a structurally complex community which offers a high potential for habitat partitioning. Surveys in 1978 (Benton/Owens Valley URA III) indicate it supports the greatest diversity of breeding bird species (22 species in the Benton Planning Unit) along with several mammals and reptiles -- up to 41 species of wildlife may occur.

Great Basin Big Sagebrush-Bitterbrush

Big sagebrush and bitterbrush dominate the overstory of this somewhat less complex habitat (81,162 acres, primarily in fair to good ecological condition). It does, however, support the greatest diversity of non-riparian breeding birds (21 species) and wildlife in general (58 species) in the Owens Valley Planning Unit. It also supports the highest density of non-riparian breeding birds in both planning units. Its large acreage suggests it is a very important habitat to wildlife.

Vegetation Manipulation

A total of 31,500 acres of habitat in the EIS area, mostly sagebrush, has been modified through vegetation manipulation. Land treatment, however, decreases structural complexity, removes some available niches, and creates an ecologically simpler habitat.

The importance of maintaining structural height and diversity is well documented. MacArthur and MacArthur (1961) demonstrated that bird species diversity is related to foliage height and diversity.

Early successional birds invade recently treated areas. Although many invader species are attracted to treated areas by the increased food and cover, little evidence supports the theory that creating more edge actually increases species diversity on treated areas (Balda, 1975).

WILD HORSES

The northeastern portions of Adobe Lake and Adobe Valley allotments and the northern tip of the Bramlette Allotment are intermittently used by 5 to 10 wild horses (refer to Figure 2-4 for herd boundaries on public land). These wild horses are a peripheral group of animals which are part of a herd proposed to be managed, in cooperation with other agencies, in the Montgomery Pass Wild Horse Management Area (draft plan, May 20, 1979). The management area comprises 207,921 acres of which 14,000 acres fall within the EIS area. None of these 14,000 acres, however, represent key habitat for the horses.

A 1977 population count of the total herd area recorded 327 adults, 20 yearlings, and 40 foals, indicating a 6 percent per year population increase based on yearlings. The current population probably numbers around 400 adults, 24 yearlings, and 48 foals. The sex ratio of the herd is about 115 males per 100 females. The 1971 herd level was approximately 70 horses.

Implementation of the Montgomery Pass Wild Horse Management Plan would result in the removal of all animals surplus to the key range grazing capacity. Thirty adult horses would be left on the key range and about 20 would continue to use primary and secondary ranges. Approximately 5 to 10 horses would continue to make occasional use of the Adobe Valley and Bramlette Allotments unless these horses moved back to the key ranges. The reduced population level represents a viable herd size which will be in balance with other resource values.

The Adobe Valley and Bramlette Allotments are outside the key wild horse ranges for this herd. These areas receive occasional use from June through October. Total forage utilization, including horse use in Adobe Valley, has been slight, less than 20 percent of annual production (Adobe Valley AMP evaluation, 1979). It is speculated that 100 AUMs of forage were consumed by wild horses in Adobe Valley in 1978, a year of heavier-than-normal use.

CULTURAL RESOURCES

Available data include: Class I inventory (existing data), prepared under contract; Class II inventory (field-sampling), prepared to minimal levels in-house; and records of archaeological clearances. Applied and directed research by various scholars has provided additional information. Efforts to gather specific data on Paiute-Shoshone sacred, religious, and traditional concerns have met with very little success.

Because of the size of the Benton/Owens Valley grazing study area, 542,000 acres a comprehensive survey to identify all historic and cultural properties that might be eligible for inclusion on the National Register of Historic Places is not possible within the funding and manpower constraints. However, the BLM has completed an existing data (Class I) inventory of the entire area and identified two properties (noted below) that are included on the National Register and at least three properties that appear to meet the criteria for inclusion on the National Register. In addition, a field sample inventory (Class II) was conducted within the study area by BLM; 10 properties were identified that appear to meet the criteria for inclusion on the National Register of Historic Places.

Site distribution and site density predictions were developed through a stratified probability sampling approach. Distribution of cultural resources is not equal within the EIS area; site clustering is apparent. Site densities vary accordingly and range from three to 36 sites per square mile. The average predicted density in the Owens Valley Planning Unit is about four sites per square mile; the prediction in Benton Planning Unit is approximately nine sites per square mile. Extrapolation of the predictive data results in a conservative estimate of at least 5,600 sites on public lands within the EIS area. Of this estimated number, fewer than 500 sites have actually been documented. Specific information on site locations and areas of special sensitivity are withheld from this document for their protection. More information can be obtained upon request from the Bishop Resource Area Office; however, specific site information on archaeological sites is confidential and will be made available only to State archaeologists. These inventories were completed in 1978 as part of the BLM land-use planning process, but are basically in accordance with the Programmatic Memorandum of Agreement between BLM and the Advisory Council on Historic Preservation, dated January 14, 1980.

Prehistory and History

Initial occupation of the New World most likely occurred between 12,000 and 40,000 years ago with an influx of people over a Pleistocene land bridge at the location now known as the Bering Strait. Within the Benton and Owens Valley Planning Units, no firm date has been established for the arrival of the first human occupants. Archaeological evidence strongly supports human presence in the area throughout the past 6,000 years. Data extending occupation to 9,000 B.C. or earlier are more tentative. Additional research is needed to satisfy the "who" and "why" of basic archaeological inquiry.

The earliest inhabitants were at least semi-nomadic, following food resources in the area according to seasonal availability. Specific subsistence patterns were no doubt dynamic, linked to changing patterns of resource availability within the environment. Population pressure and/or environmental change is postulated as a caustive factor in cultural change through time.

While contact occurred after 1825, most likely with one of several expeditions through the area by Joseph Reddefort Walker. Ethnographic contact was not documented, however, until the 1850s with the expedition of Captain John Davidson and a detachment from Fort Tejon to the south. In 1859 when Davidson first reported from Owens Valley, the Indian residents had developed a unique form of agriculture based on large-scale irrigation. Villages were semi-permanent, located near clean, running mountain streams draining the Sierra Nevada. Small bands travelled from the valley bottoms to the crests of mountains (Inyos, Whites, Benton Range, and the Sierra Nevada) in quest of seasonally available resources. The nut of the pinyon tree had become a staple crop, supplemented by seeds, roots, tubers, hunting, and fishing.

Today, nearly 1,500 Paiute-Shoshone Indians reside in the EIS area. While non-Indian customs have been adopted in part, many traditional aspects of life have been maintained over the years. Current efforts are underway to preserve traditional aspects of Paiute-Shoshone heritage, including language, art, foods, crafts, religious beliefs, and the physical remains of the past as revealed in the archaeological record.

Non-Indian people came to the EIS area to stay in the late 1850s with the inception of mining in the Inyo-Mono region. Dogtown and Mono Diggins were early strikes in the north, closely followed by a silver strike at Cerro Gordo in the Inyo Mountains. These early strikes, and strikes at Bodie and elsewhere throughout the region spurred a small population boom east of the Sierra Nevada. Livestock were brought into the area during the same span of time, and a good beef industry began to develop in support of the mining activity. Soon a railroad, farms, ranches and numerous towns were in full swing.

Changes in the mining market and the eventual export of water to the City of Los Angeles changed the appearance of the area. Today, water is one of the chief exports of the region, and tourism is a major industry. Through the past 120 years, the livestock industry has presevered, and the mines and hills are still searched for precious metals and rare earths. Farming, of course, has declined with the loss of available land and water.

The valleys, hills, and mountain slopes of the Benton and Owens Valley Planning Units are dotted with the remains of prehistoric and historic occupation. In spite of severe impacts through natural causes, inadvertent destruction, relic-hunting, vandalism and thief, these cultural resources still provide a silent testament to the past.

Prehistoric and Historic Resources

Occupation sites, temporary camps, special-use sites, and rock art form basic categories for most of the documented prehistoric resources within the EIS area. Sacred, religious, and traditional concerns of the Paiute-Shoshone Indians within the EIS area form another category, blending prehistoric resources with current tribal lifeways (poorly documented to date). Although no prehistoric resource sites on public lands in the EIS area have been listed on the National Register of Historic Places, certain prehistoric resources do have potential eligibility for National Register inclusion. Known historic resources include "ghost" towns, ranch sites, dwellings, mines, railroad grades, roads, and trash heaps. The Saline Valley Salt Tram, located on public lands, and the World War II relocation camp of Manzanar are listed on the National Register of Historic Places. Additional historic resources within the EIS area have potential for National Register eligibility.

Native American Concerns

Paiute-Shoshone concerns include a general concern for cultural resources as well as for religious and traditional values. The availability of certain plants as well as access to particular areas are of concern to this group. They have also indicated a general concern over the potential alteration of water sources and riparian vegetation. However, discussions with tribal representatives have identified only the general concern, not specific areas and plant species of concern.

VISUAL RESOURCES

The data used in the analysis of visual resources were obtained from the Benton and Owens Valley Unit Resource Analysis, Step III (URA III. These data consisted of field evaluations such as scenic quality ratings, visual sensitivity assessments, and identification of distance zones from various observation points.

Visual Resource Classes

Visual resources were inventoried using the Bureau's Visual Resource Management System (VRM), which evaluates the landscape by the quality of its scenery, the sensitivity of an area to visual change, and distance of an area from viewer points. These characteristics were mapped and used to derive a composite map through which all lands were classified into one of five VRM classes. The purpose of these management classes is to describe the degree of modification permitted in the basic elements of the landscape. Based on the identified visual character of an area and its management class, BLM land-use management practices will be managed to minimize adverse visual impacts to the visual resource while maintaining the effectiveness of those practices.

Study areas have been classified and described into four of the VRM classes, which are discussed below:

Class I - Applies only to classified special areas, such as wilderness, primitive areas, natural areas, and similar situations where management is to be restricted. Legislation or policy establishes this quality standard. This class permits only natural ecological changes.

Lands in this class consist of the Inyo Mountains in the southern Owens Valley. This area ranges from 7,000 to 9,000 feet in elevation. Undulating horizontal bands of folded strata add high geological interest to the area. This area displays interesting combinations of colors, hues, and erosional patterns. Snow can be found here until June, and the vegetation reflects this influence by the speciation and morphological characteristics exhibited. Outstanding viewsheds of Owens Valley, Owens Lake, and the High Sierra can be observed from this area.

Class II - Changes in any of the basic elements (form, line, color, or texture) caused by a management activity should not be evident in the characteristic landscape.

Lands in this class include the Alabama Hills National Recreation Lands, the White Mountain Alluvial Fans, Mono Lake and land adjacent to the southwestern portion of the lake.

The Alabama Hills National Recreation Lands consists of highly scenic, massive granitic boulders which have weathered to form interesting erosional and visual patterns. Brown and red soils as well as green and yellow low-growing desert shrubs add visual contrast to the area.

The White Mountain Alluvial Fans consist of a long bajada of fans found on the western slope of the White Mountain Range. Mixed desert shrubs and low-lying bushes are common throughout. The hues and tones are gentle and subdued.

The Mono Lake area is dominated by Mono Lake which was formed by glaciation and subsequently trapped in the present basin by faulting activity. Saltbush and sagebush are the dominant species of vegetation on adjacent lands.

Class III - Changes in form, line, color, or texture caused by a management activity may be evident in the characteristic landscape, but the change should remain subordinate to the visual strength of the existing character.

A majority of the EIS area falls within this class and includes the Tungsten Hills - rounded, granitic hills with many drainages and mining activity; the Owens Valley fan system-alluvial outwash from the Inyo Mountains and the Eastern Sierras; portions of the Volcanic Tablelands - a tabletop landform originating from a red, inclined volcanic tuff flow; and Granite Mountain - a granitic range of hills cut by numerous drainages and basins.

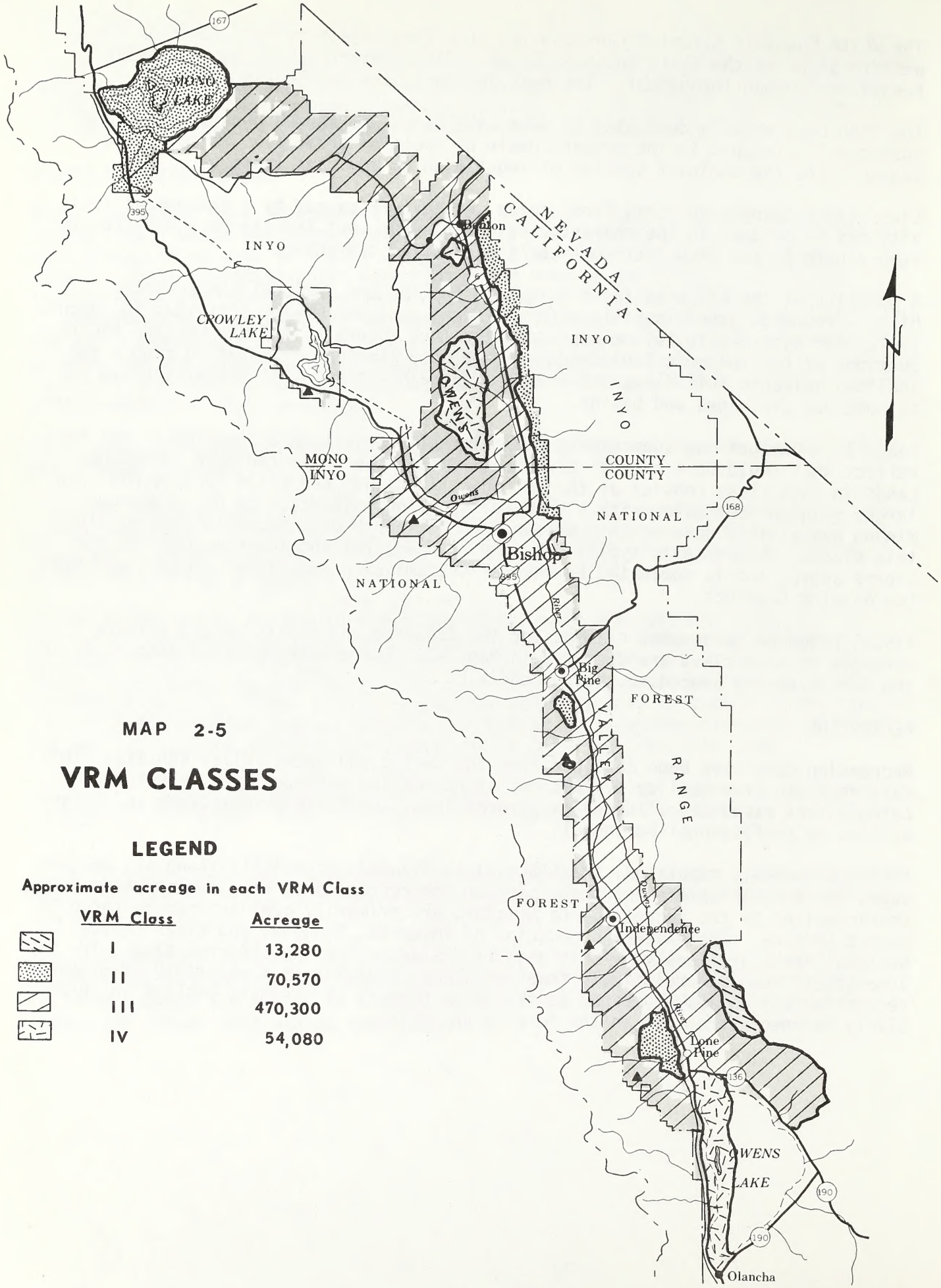
Class IV - Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape. Lands in this class consist of the Volcanic Tablelands and Blind Springs Hill - a large, rounded protrusion with a rounded ridgeline, dissected by dry drainages. Mining has visibly scarred this area. The area north of Olancha is also within this class. This area is typified by the rounded, rolling lower reaches of the Sierra scarp, and is dominated by several transmission powerlines, roads, and the Los Angeles Aqueduct.

Visual Resource Management classes for the EIS area and a list of approximate acreages in each class are depicted in Map 2-5. For a more detailed discussion of the VRM inventory procedure, see Appendix E.

RECREATION

Recreation data have been obtained from the Benton and Owens Valley URA III. This data resulted from quality evaluations of recreation opportunities, visitor-use calculations based on collected campground fees, and field observations and interactions by professional personnel.

Although sparsely populated, the EIS area is flanked, especially along its western edge, by lands which are extremely popular for recreational use. These lands, characterized by the rugged Sierra Nevadas, are primarily administered by the U.S. Forest Service. The eastern boundaries of Yosemite, Sequoia, and Kings Canyon National Parks are located within a short distance from the EIS area also. The EIS area itself received relatively fewer visitors, engaging in a diversity of dispersed recreation activities, compared to the large numbers of visitors engaged in intensively managed recreation in the forests and parks.


MAP 2-5
VRM CLASSES
LEGEND
Approximate acreage in each VRM Class
VRM Class
Acreage
I
13,280
II
70,570
III
470,300
IV
54,080
MONO LAKE
CROWLEY LAKE
INYO
MONO
INYO
COUNTY
COUNTY
NEVADA
CALIFORNIA
Benton
Bishop
Big Pine
Independence
Lone Pine
Olancha
OWENS
LAKE
NATIONAL
FOREST
VALLEY
RANGE
Owens
River
167
395
168
136
190

Designated Areas

Two BLM-administered sites in the EIS area have been formally designated for management of their unique resources: Negit Island Natural Area (an important California gull rookery), and Alabama Hills National Recreation Lands (unique geologic and aesthetic qualities). The 35,000 acres of the latter area receives a limited amount of grazing use as part of the Alabama Hills Allotment (6046).

Developed Areas

Five developed recreation sites exist on the public lands within the EIS area. These five sites are the Crowley Lake, Tuttle Creek, Symmes Creek, Goodale Creek, and Horton Creek Campgrounds, each receiving relatively low use. With each campground located adjacent to either a stream or lake, the major recreational activity engaged in by campground users is fishing. Numerous county and Forest Service recreation sites exist nearby and receive significantly higher recreational use. Most of the Forest Service sites are located within the many canyons along the eastern flank of the Sierras.

Present Visitor Use

The EIS area primarily represents a semi-primitive, open-space recreation resource, which includes excellent scenic, primitive, geologic, wildlife and archaeological-historical values.

Major recreational use of the public lands occurs primarily from April to October and is of an extended nature, that is, three-day weekends and week-long vacations. During the total use seasons, the average occupancy rate in the campgrounds is 11 percent. Most of the users are from the Los Angeles metropolitan area.

General sightseeing, fishing, and hunting comprise the major recreational pursuits in the EIS area. The remaining visitor use includes camping, collecting, general exploring, and even hang-gliding from the steep, surrounding mountainsides to the public lands on the valley floor.

WILDERNESS

The data used in the wilderness analysis originate from inventories conducted to determine lands that contain wilderness values. The inventory results were published in a December 1979 Bureau publication, Final Intensive Inventory of Public Lands Administered by BLM California Outside the California Desert Conservation Area. In addition, inventory decisions contested by the public were included in the analysis. These contested inventory units were identified and published in a March 1980 report, Status Summary. Those inventory units identified as containing wilderness values as well as contested units are public lands that require management in a manner so as not to impair their wilderness characteristics. These areas will be referred to as lands under wilderness review.

Map 1-2 (inside back cover) shows the boundaries of lands under wilderness review.

The Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP), published on December 12, 1979, provided direction and guidance in assessing the level of grazing activity permissible in lands under wilderness review. Copies of the aforementioned inventory results and IMP can be obtained on request from the BLM, Bakersfield District Office.

Lands Under Wilderness Review

The Federal Land Policy and Management Act mandates an inventory of all roadless areas of 5,000 acres or more that have wilderness characteristics as described in section 2(c) of the Wilderness Act of 1964 (P.L. 88-577).

The Act defines wilderness as:

> "an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

In accordance with FLPMA and section 2(c) of the Wilderness Act of 1964 (P.L. 88-577), a wilderness inventory of public lands in the EIS area was conducted. The inventory identified areas meeting the above Wilderness Act criteria and resulted in the designation of those areas as Wilderness Study Areas (WSAs). In the EIS area, 20 wilderness inventory units, or portions thereof, were identified as WSAs. A number of these WSAs were contested. These contested WSAs also include portions of original inventory units that were removed from wilderness review due to the lack of primary wilderness values. In addition, certain lands that were not recommended for WSA status were contested. In total, 294,800 acres of public lands in the EIS area are regulated under the IMP. Management of these lands, contested WSAs and contested non-WSAs, will be regulated under the IMP. The focus of impact analysis in this EIS will be directed to all lands under wilderness review and the IMP, and not just solely those WSAs that have been recommended for wilderness designation in the MFP II.

Each area under wilderness review is to be managed in a manner so as not to impair its suitability for preservation as wilderness. This special management provision, known as Interim Management is subject, however, to the continuation of existing mining and grazing uses in the same manner and degree in which they were being conducted prior to FLPMA's passage on October 21, 1976. FLPMA further provides, however, that these continuing uses may be regulated to prevent unnecessary or undue degradation of the lands and their resources. Although the grazing recommendations were made prior to the IMP publication, land use activities in lands under wilderness review will be conducted in accordance with the IMP until Congress makes a final decision regarding the wilderness suitability of

identified WSAs. If Congress designates any WSA as wilderness, it will be managed in accordance with the provisions of the Wilderness Act of 1964. If Congress rejects wilderness designation, the WSA will return to non-wilderness status and no longer be managed under IMP restrictions. Contested areas will remain under the IMP until an adjudicative process determines that they lack wilderness characteristics whereupon they will return to non-wilderness status.

Interim Management

The IMP provides guidelines for rangeland activities in lands under wilderness review. Section 603(c) of the Federal Land Policy and Management Act (FLPMA) differentiates grazing uses as those that are grandfathered and those that are not. The criteria for identifying grandfathered grazing activities is:

> Grazing authorized and used during the 1976 grazing fee year, including areas that were in the "rest" cycle of a grazing system.

In both grandfathered and non-grandfathered grazing, changes in number and kind of livestock or period of use may be permitted, so long as:

(1) the changes do not cause declining condition or trend of the vegetation or soil, and

(2) the changes do not cause unnecessary or undue degradation of the lands.

In addition, the IMP provides guidelines for the installation and maintenance of range improvements. Pre-FLPMA range improvements may continue to be used and maintained.

Temporary range improvements may be installed if they satisfy the non-impairment condition as set forth in the IMP. New, permanent range improvements which are not grandfathered may be approved for the purpose of enhancing wilderness values by better protecting the range in a natural condition. However, they must satisfy the following criteria:

(1) Motorized access must not be required if the area is designated as wilderness.

(2) The improvements are substantially unnoticeable in the WSA as a whole.

(3) After any needed reclamation is complete, the area's wilderness values must not have been so degraded as to significantly constrain the Secretary's recommendation as to the suitability of non-suitability for preservation as wilderness.

SOCIAL AND ECONOMIC CONDITIONS

The EIS area is within Inyo and Mono Counties, California. These counties will be referred to as "the Inyo-Mono Region" or "the region." This region has been selected because it contains the EIS area and is composed of whole counties. Little data on social and economic factors are available on a subcounty basis in the region.

Population

The region had a population of 27,200 people in 1979. Most of these people live in Inyo County but the Mono County population has been increasing rapidly, by 8.9 percent in 1979. Table 2-6 shows the population of the region by county. Within the EIS area there are about 15,500 residents. Most of these people live in communities along U.S. Highway 395. Table 2-7 shows populations of communities in or adjacent to the EIS area.

TABLE 2-6
POPULATION OF THE INYO-MONO REGION - 1979

County	Population
Inyo	18,600
Mono	8,600
Total	27,200

Source: California Finance Department, Population Research Unit, "Population estimates for California Counties." Report 80 F-1, December 1979.

TABLE 2-7
POPULATION OF COMMUNITIES IN OR ADJACENT TO THE EIS AREA - 1978

Community	Population	Community	Population
Benton	131	Big Pine	1,400
Bishop	3,390	Cartago	75
Chalfant	271	Hilton Creek	184
Independence	1,000	Laws	20
Lee Vining (outside of EIS area)	315	Lone Pine	2,000
Mammoth (1976-outside of EIS area)	2,232	Tom's Place (outside of EIS area)	101

Source: State of California, Department of Transportation highway signs.

Employment and Income

Tables 2-8 and 2-9 show employment and income by sector for the region. Farming, which includes livestock grazing, is a small proportion of the region's total employment and income. Agricultural employment in the region is declining due to the actual decline in irrigated acreage. It has also declined relative to total employment due to the large increase in service and government related employment.

TABLE 2-8
WAGE AND SALARY EMPLOYMENT
BY INDUSTRY,
INYO-MONO COUNTIES (1976)

Industry	No. of Employees	Percent of Total Employment
Farm	75	1
Manufacturing and Construction	425	5
Trade (retail, wholesale, services, etc.)	4,275	49
Transportation and Utilities	425	5
Government	2,900	33
Other	650	7
Total	8,750	100%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, Table 5.0 series, July 1978.

TABLE 2-9
PERSONAL INCOME BY MAJOR SOURCES
INYO-MONO COUNTIES (1976)

Industry	Earnings, (thousands of dollars)	Percent of Total of Counties' Earnings
Farm	3,221	4
Manufacturing/Construction	6,262	7
Trade and Services	38,209	44
Transportation and Utilities	6,965	8
Other	351	1
Government	31,431	36
Total	$86,439	100%

Source: U. S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, Table 5.0 series, July, 1978.

The major economic growth factor in the region is tourism although the main tourist attractions are outside the EIS area at Mammoth, June Lake, and Yosemite National Park. Many of the visitors to these spots travel through the EIS area and spend money in its communities. A second, but related, factor is retirement living. The communities in the Owens Valley, particularly Bishop, are popular as retirement. These people also have been important to the growth of the trade and services sectors. It is important to note that the trade and services sectors provide 44 percent of the personal income in the Inyo-Mono Region.

Livestock Industry

The most prevalent form of agriculture in the region is livestock ranching. Livestock sales account for about 60 percent of the region's total gross agricultural sales. In 1979 there were about 33,800 head of cattle in the region. Approximately one third of the region's cattle obtain some of their feed from the Benton Owens Valley allotments. These allotments provide 9 percent of the feed requirements for cattle feeding on public land forage. The value of the meat produced by this 9 percent is $170,000 (1979 prices). Total livestock sales in 1976 for the region were $6.5 million.

Sheep which graze on Benton Owens Valley allotments also graze in the California Desert to the south and the San Joaquin Valley to the west at different seasons of the year. The operation base for these ranchers and about 150,000 sheep is in Kern County. In a typical year 27,000 sheep obtain 13 percent of their annual forage requirement from the Benton/Owens Valley allotments. The value of the wool and meat produced from BLM forage is $240,000 at 1979 prices. The total value of cattle and sheep production from BLM forage in the EIS area is $410,000 at 1979 prices.

Livestock Management

Most allotments on public lands within the area are adjacent to or intermingled with lands controlled by the City of Los Angeles' Department of Water and Power (DWP) or the Inyo National Forest (INF). On several allotments, the boundaries are not fenced so the lands are managed together. Numbers of stock, seasons of use, and range facilities and treatments are often cooperatively handled by means of memoranda of understanding, cooperative agreements, and other less formal arrangements between the agencies and the permittees. Grazing on public lands depends on livestock water sources located on DWP or INF controlled lands on several allotments.

Livestock Operators

There are 45 BLM livestock grazing allotments in the EIS area operated by 18 cattle operators, six sheep operators, and two combination sheep-cattle operators (Table 2-10). Two cattle operators have preference rights but are not currently using the available forage. For most operators spring is the time of greatest use and dependence upon BLM forage. Almost all of the operators use National Forest lands for summer grazing.

TABLE 2-10
ANALYSIS OF LIVESTOCK OPERATORS
45 LIVESTOCK ALLOTMENTS
26 LIVESTOCK OPERATORS

	18 Cattle Operators				6 Sheep Operators	2 Combination Operators
	Part-time	Small	Medium	Large		
Number of Operators	3	5	7	3	6	2
Average herd size	Less than 50	171	556	1,413	2,090	2,700 Cattle 11,000 Sheep
Percent of total annual forage coming from BLM allotments in the EIS area	Less than 5%	19%	11%	8%	5%	5%
Number of operators by level of seasonal dependence:						
Highly dependent	1	1	0	0	1	0
Moderately Dependent	0	3	5	3	4	2
Low Dependency	2	1	2	0	1	0
Percent of AUMs obtained from public lands	5%	9%	24%	18%	11%	32%
Number of AUMs	1,032	1,965	5,119	3,850	2,239	6,805

All except two of the operators are family or partnership enterprises. There is one corporate ownership and one trust ownership. With the exception of the smallest operators, all are dependent upon livestock for their primary source of income.

Cattle Operators

The 18 cattle operators have been separated into four categories based on the size of their livestock operations: part-time (less than 50 cattle), small (50-250) cattle, medium (250-800) cattle, and large (800+ cattle). In addition, an annual operating budget for a hypothetical representative ranch is presented in Appendix F.

There are three operators in the part-time category. Two of them are not using their allotments currently. The only active operator obtains less than 5 percent of his forage from BLM. These factors have other primary income sources and use their allotments when market conditions are advantageous. By season, one of these operators is highly dependent upon BLM forage when operating at full capacity.

The five small cattle operators have an average herd size of 171 head. They obtain 19 percent of their total forage requirements from these allotments. The dependency of the operators varies from 8 to 48 percent. None of these operators depends primarily upon these beef cattle enterprises for their income. Two operators are also involved in a family ranch enterprise in the EIS area which is included in the "medium" size category. By season, one operator in the "small" category is highly dependent upon BLM forage in that part of the spring season when his entire herd is on the public lands.

There are seven "medium" size cattle operators with an average herd size of 556 head. An average of 11 percent of the forage requirement is met by their BLM allotments. Individual operators' total forage dependency varies from 3 to 23 percent. Five of these operators are based on properties leased from the City of Los Angeles in the Owens Valley, the other two are headquartered in Kern County. These operators depend primarily upon their livestock enterprises for income. By season, none of these "medium" category operators is highly dependent upon the BLM forage.

Three cattle operators are in the "large" category. They have an average herd size of 1,413 head. Their BLM allotments provide 8 percent of the feed needed for these operations. Dependency ranges from 3 to 10 percent by operator. These operators lease land from the City of Los Angeles in the Owens Valley, however, two are headquartered outside the EIS area. All depend primarily upon their livestock enterprises for income. By season, none of these is highly dependent upon the allotments in the Benton/Owens Valley EIS area.

Sheep Operators

An example of an annual operating budget of a representative sheep operation is presented in Appendix G. There are six sheep operators with allotments in the EIS area. These operators are all based in the San Joaquin Valley. Usually these sheep are moved over an area much larger than the EIS area in a one-year grazing period. The grazing pattern includes: San Joaquin Valley, California

Desert, Benton-Owens Valley, National Forest lands, and BLM lands to the north of the EIS area. This provides an annual cycle in which the animals are driven or trucked from south to north, and low elevations to high elevations following the growth of forage plants. The actual use of any particular area varies greatly from year to year because the operators adapt to market conditions and the variation in forage productivity throughout the large area being used. Thus, the use of the BLM-administered lands in sheep allotments has varied greatly from year to year.

In addition to the allotments in the EIS area there is a sheep driveway which extends north and south through the EIS area. It is bounded on the north by Mono Lake and extends past Owens Lake on the south into the California Desert. Sheep operators are permitted to drive their herds from one grazing area to another via this route. The driveway has been used primarily by sheep operators but its use is irregular - in some years it is not used at all. Livestock driving has been largely replaced by livestock trucking. However, use of the driveway reduces trucking expenses.

The six operators have an average of 3,450 sheep each, with a range of 3,000 to 6,000 head. They obtain about 5 percent of their total forage requirements from their EIS area allotments. The bulk of their feed in the EIS area comes from grazing lands owned by the City of Los Angeles. The BLM lands which are grazed are intermingled with these City lands. By operator, the individual dependency varies from 1 to 9 percent. One is highly seasonally dependent upon the BLM forage in these allotments.

Combination Operators

There are two "combination operators" in the EIS area who have significant herds of both sheep and cattle on BLM allotments. One is a partnership with 390 cattle and 2,500 sheep. Thirteen percent of this operator's annual feed requirement is met by the BLM allotments. In addition to the enterprise which use the EIS area, each of the partners has a separate sheep-grazing enterprise outside the EIS area. The other combination operator has 5,000-6,000 cattle and 20,000 sheep. Most of the cattle are outside of the EIS area. This operator's sheep graze in the same manner as described above under sheep operators. Approximately 5 percent of this operator's feed requirement is met by the BLM allotments. Neither operator is highly seasonally dependent upon BLM forage in the EIS area.

CHAPTER 3
ENVIRONMENTAL CONSEQUENCES

Chapter 3
Environmental Consequences

Chapter 3 describes and analyses the probable environmental impacts of the alternatives. The analysis is designed to be commensurate with the expected magnitude, intensity, duration, and incidence of impacts. Special attention is given to environmental components protected by law or of particular significance to man and the environment.

BLM specialists used the following criteria to determine the nature of impacts identified:

Short-term impact: Unnoticeable after 5 years or less.

Long-term impact: Still present after 25 years.

Positive impact: Resource conditions and/or trends would improve.

Negative impact: Resource conditions and/or trends would deteriorate.

No impact: Resource conditions and trends would neither improve nor deteriorate.

The following assumptions were made as a basis for the impact analysis:

The alternative(s) or part(s) selected would be fully implemented as described.

Implementation would be completed within 5 years following acceptance of the EIS.

There would be full compliance with the stocking levels and utilization levels described.

There has been and would be livestock use up to the maximum allowable in each allotment, except for Bramlette (6038) and Volcanic Tablelands (6007) where present use is less than the allowable.

The principal resource directly impacted is vegetation. Changes in vegetation would affect other resources.

Design restrictions would be effectively carried out and disturbance limited to that identified in the alternative.

Changes in the amount of available forage resulting from improvement or decline in range conditions as a result of implementation of any of the alternatives would be allocated to livestock, wildlife and other uses in the following ratio: 47½ percent to livestock, 2½ percent to wildlife, 50 percent to watershed, visual resources, non-grazing wildlife and other non-grazing uses (see page 1-7).

Monitoring studies would be conducted as indicated and requisite grazing adjustments made.

Impact analysis for each grazing element (e.g. fences, stocking levels, grazing systems) includes a consideration of the interrelated impacts from other elements.

Grazing management has no significant impacts on geology, climate, and air quality.

Any area managed under the No Grazing alternative would be so managed permanently.

Chapter 3 also presents additional mitigating measures to reduce or eliminate adverse environmental impacts, unavoidable adverse impacts, short-term use versus long-term productivity of the environment, and irreversible or irretrievable commitments of resources involved in implementing grazing management.

CLIMATE AND AIR QUALITY

As indicated in Cahpter 2c, climate and air quality would be minimally impacted under Alternative 1 (No Action) and Alternative 4 (No Grazing). A short-term increase in smoke would occur during the prescribed burning of 29,000 acres in four allotments (see Table 1-3) under Alternative 2 (Proposed Action) and Alternative 3 (Stocking by Condition Class).

SOILS

Soil properties (characteristics) were not considered separately from erosion condition as was the case in Chapter 2. Soil erodibility may be viewed as a soil property or as arising from soil properties. Erosion condition is a composite of inherent soil erodibility and biotic factors. The most important biotic factor is the ground cover of vegetation and litter. Table 3-1 summarizes the impacts on soils.

Alternative 1 - No Action

Under this alternative soil erosion would continue at its present low level of an estimated 0.25 tons/acre/year. Present rates of water-borne and wind-borne sediment yields would continue also. There would, however, be an increased potential for problems in the future due to the range being licensed for use over its carrying capacity.

Alternative 2 - Proposed Action

Soils would generally benefit under this alternative. The 12 percent reduction of livestock AUMs would increase ground cover (litter and vegetation) and soil fertility, reduce soil erosion (primarily wind erosion), and soil compaction. The installation of 147 miles of fence will have a localized, adverse short-term impact. An insignificant localized increase in sediment yield and wind erosion for a total of about 138 acres is expected for two or three years following construction. The soil surface will eventually restabilize at or near its present condition. Long-term soil disturbance (about 34 acres) for water development represents an insignificant, unavoidable, adverse impact. Soil compaction will be the primary impact. An insignificant localized increase in sediment yield and wind erosion is expected for the area around each water development and along any new roads for the development.

On four allotment areas prescribed burning will have a short-term hydrophobic effect on course textured soils that will increase runoff and erosion for one to

TABLE 3—1
ANALYSIS OF IMPACTS ON SOILS

Grazing System	Acres 1/	Changes In: Ground Cover and Litter	Organic Matter and Fertility	Compaction	Infiltration	Sediment Yield
ALTERNATIVE 1 NO ACTION						
Intensive Management Rest Rotation	57,150	Slight Decrease	Slight Decrease	Slight Increase	Slight Increase	Slight Increase
Intensive Management Deferred Rotation	65,234	Slight Decrease	Slight Decrease	Slight Increase	Slight Decrease	Moderate Increase
Less Intensive Management Seasonal Restriction	381,934	Slight Decrease	Slight Decrease	Slight Increase	Slight Decrease	Moderate Increase
Grazing Season Unrestricted	37,682	Slight Decrease	Slight Decrease	Slight Increase	Slight Decrease	Moderate Increase
ALTERNATIVE 2 PROPOSED ACTION						
Intensive Management Rest Rotation	57,150	Increase	Increase	Decrease	Increase	Slight to Moderate Decrease
Intensive Management Deferred Rotation	65,234	Increase	Increase	Decrease	Increase	Slight to Moderate Decrease
Less Intensive Management Seasonal Restriction	381,934	Increase	Increase	Decrease	Increase	Slight Decrease
Grazing Season	37,682	Increase	Increase	Decrease	Increase	Slight Decrease
ALTERNATIVE 3 STOCKING BY CONDITION CLASS						
Intensive Management Rest Rotation	57,150	Increase	Increase	Decrease	Increase	Slight to Moderate Decrease
Deferred Rotation	65,234	Increase	Increase	Decrease	Increase	Slight to Moderate Decrease
Less Intensive Management Seasonal Restriction	381,934	Increase	Increase	Decrease	Increase	Slight to Moderate
Grazing System Unrestricted	37,682	Increase	Increase	Decrease	Increase	Slight to Moderate Decrease
ALTERNATIVE 4 NO GRAZING						
Intensive Management Rest Rotation	57,150	Increase	Increase	Decrease	Increase	Moderate Decrease
Deferred Rotation	65,234	Increase	Increase	Decrease	Increase	Moderate Decrease
Less Intensive Seasonal Restriction	381,934	Increase	Increase	Decrease	Increase	Moderate Decrease
Grazing Season	37,682	Increase	Increase	Decrease	Increase	Moderate Decrease

1/ Public Land Acres

TABLE 3—1
ANALYSIS OF IMPACTS ON SOILS

ALTERNATIVE 1 NO ACTION

Grazing System	Acres 1/	Changes In: Ground Cover and Litter	Organic Matter and Fertillity	Compaction	Infiltration	Sediment Yield
Intensive Management Rest Rotation	57,150	Increase	Increase	Decrease	Increase	Moderate Decrease
Deferred Rotation	62,234	Increase	Increase	Decrease	Increase	Moderate Decrease
Less Intensive Seasonal Restriction	381,934	Increase	Increase	Decrease	Increase	Moderate Decrease
Intensive Management	381,934	Ground Cover	Organic Matter	Slight Increase	Slight Decrease	Moderate Decrease

two years after the prescribed burn. In the long-term, the soil will benefit by the changes in plant community. A minor increase in wind erosion may occur in areas if high-speed winds occur after the burn. This increase is not expected to be significant since 70 to 80 percent of the soil surface is bare at the present time.

Chemical brush control proposed for two allotments (7,360 acres) (see Table 1-5) will have little effect on the soils in the short and long-term. EPA approved herbicides will be utilized with short-term residual effects on the soils.

Alternative 3 - Stocking by Condition Class

The impacts to soils from projects will be identical to those of the Proposed Action. The 43 percent reduction in stocking levels proposed in this alternative would, however, reduce soil erosion and compaction and increase both ground cover and soil fertility faster and to a correspondingly greater degree than the reductions of the Proposed Action.

Alternative 4 - No Grazing

With the potential exception of fencing impacts, this alternative would be most beneficial to the soils of the EIS area. Soil compaction and erosion due to livestock grazing would cease. There would be increased soil fertility due to increased plant cover and litter. If public lands had to be fenced to prevent trespass there would be short-term, localized, adverse impacts to the soils. These would be more than compensated by the beneficial effect of complete protection of the public lands soils resource.

Conclusions:

The most beneficial alternative to soils would be Alternative 4. However, soil impacts are expected to be minimal under Alternatives 1, 2 and 3. This is because of the many highly permeable soils, gentle topography, and low precipitation which occurs mainly during the winter. Areas of soil disturbance are expected to be generally small and localized.

WATER

An estimate of the current water quality of each perennial stream and some intermittent streams was made using (1) stream survey data, (2) limited water quality data available from the U.S. Geological Survey and the Los Angeles Department of Water and Power, (3) knowledge of water quality problems in some areas, (4) knowledge of the correlation between water quality and estimates of the quality of trout habitat made by the BLM stream survey crew, and (5) knowledge of the correlation between water quality and channel stability. Professional judgement was used to estimate the impact of each alternative on current water quality (Appendix H). It should be recognized that this estimate of current water quality does not include bacterial constituents nor most chemical constituents.

Stream survey stability was evaluated using a U.S. Forest Service (1975) method (example in Appendix C). The method uses 15 indicators of channel stability. For each indicator a range of conditions, from excellent to poor, exists. Each condition class within each indicator is assigned a number based on its importance in determining overall channel stability. For each stream, the surveyor determines the condition of each indicator, sums the numbers and the total is translated into an overall channel stability rating of excellent, good, fair or poor. These ratings are considered the current channel stability condition of each stream. Certain indicators of channel stability, such as bank protection by vegetation, channel capacity, cutting on the lower banks, and others, are more prone to be influenced by changes in grazing practices. Professional judgement was used to estimate the impact of each alternative on these indicators (Appendix H). If the institution of an alternative would change the condition of the indicator, for example, from fair to good, a different number would be assigned to the contribution of that indicator to overall channel stability. If enough of the indicators are predicted to change from the institution of an alternative, the overall channel stability rating changed from one condition class to another.

Information available on stream flow, ground water aquifer capacity, yield, and water quality, spring flow, and spring water quality is not sufficiently detailed to analyze impacts of each alternative on each allotment.

Impacts from all alternatives on stream flow, ground water quantity, and quality are expected to be negligible.

Impacts on spring flow and spring water quality will be significant in some areas. Estimates of these impacts on springs are of a general nature.

Assumptions:

1. Impacts from each discrete action, for example, grazing systems, stocking level change, etc., include the interrelated impacts from other discrete actions in each alternative.

2. Impacts in streams in each allotment (Appendix H) are based on the location of the streams within the proposed allotment boundaries.

Alternative 1 - No Action

The current condition of stream water quality and channel stability is estimated in Appendix H. No data from the past is available to indicate the former condition of stream water quality and channel stability. If such data were available, the impact of present practices in the streams in the past and in the present would be known. This would establish a trend in the condition as a result of the implementation of current grazing practices and the trend could be extrapolated into the future to predict the impacts from Alternative 1.

However, since data from the past is not available, a different method of estimating impacts from Alternative 1 was used; impacts from Alternative 1 are determined to be the impacts of not making the changes prescribed by Alternatives 2

and 3. Certain components of the total grazing management system (example-institution of rest rotation, season of use changes, etc.) would change under Alternatives 2 and 3. In Tables 3-2 and 3-3, under the heading of Alternative 1, the impacts of not instituting these changes and thus retaining present grazing practices, are estimated. With respect to each discrete action, impacts are estimated only for those streams which would be affected by that discrete action under Alternatives 2 and 3.

Using this method of estimating impacts, the institution of Alternative 1 would have mostly negligible impacts on water quality and channel stability (Tables 3-2 and 3-3). However, several miles of stream would be negatively impacted by not instituting the changes proposed in Alternatives 2 and 3. With regard to positive impacts on water quality and channel stability from the institution of Alternative 1, 15.4 miles of stream would be positively impacted by retaining present seasons of use and 0.5 miles of stream would be positively impacted by retaining sheep grazing in the Keough Allotment.

Alternative 2 - Proposed Action

Rest rotation will generally have a negligible impact on water quality and channel stability since most streams which would be exposed to this grazing system are already in good condition or would be fenced from livestock use entirely. A minor negative impact would occur on streams in fair to poor condition (Appendix H and Tables 3-2 and 3-3) because greater intensity of use during the period of use would cause the water quality and channel stability of such streams to decline (Platts 1979).

Deferred rotation would generally have a negligible or slightly positive impact. This grazing system would allow a slight improvement in water quality of streams which presently have fair water quality (Appendix H and Table 3-2). Since channel stability responds more slowly to changes in management, a deferred grazing system would not affect current channel stability (Appendix H and Tables 3-3).

Reduction in stocking rates greater than 150 AUMs would have a positive impact on streams where water quality and channel stability are presently fair to poor. In like manner, increases greater than 150 AUMs would have a negative impact where water quality and channel stability are fair to poor (Appendix H and Tables 3-2 and 3-3). Smaller increases and reductions would have a negligible impact since livestock congregate near water resources and small changes in numbers would have indistinguishable impacts.

The proposed season of use changes would have negligible to moderately negative impacts on water quality and channel stability. Negative impacts would occur on 11.5 miles of streams where the grazing season would be extended into the summer and early fall (Tables 3-2 and 3-3). Summer grazing has an adverse impact on water quality and channel stability because the hot summer weather increases livestock use of streams. Early spring grazing also has an adverse impact because consumption of new growth results in little accumulative gain in riparian vegetation which is needed to protect stream banks. Deferred late fall and winter grazing provide the best protection for streams (Platts 1978).

TABLE 3—2
IMPACTS ON WATER QUALITY

Proposed Change	Alternative 1 Miles of Stream Affected			Alternative 2 Miles of Stream Affected			Alternative 3 Miles of Stream Affected			Alternative 4 Miles of Stream Affected		
	Positive Miles/ Intensity 1/	Negligible Miles	Negative Miles/ Intensity 1/	Positive Miles/ Intensity 1/	Negligible Miles	Negative Miles/ Intensity 1/	Positive Miles/ Intensity 1/	Negligible Miles	Negative Miles/ Intensity 1/	Positive Miles/ Intensity 1/	Negligible Miles	Negative Miles/ Intensity 1/
Rest Rotation	0	6.1	4.9 low	0	9.7[2]	1.3 low	0	9.7[2]	1.3 low	NA	NA	NA
Deferred Rotation	0	43.3	0	15.3 low	28.0	0	15.3 low	28.0	0	NA	NA	NA
Stocking Level	0	41.9	31.0 Mod	16.6 low	46.9[3]	9.4 low	43.4 low	28.0[3]	1.5 Mod.	67.3 Mod.	5.6	0
Season of Use	15.4 low	2.5	5.6 low	1.3 low	10.7[3]	11.5 Mod.	1.3 low	10.7[3]	11.5 Mod.	NA	NA	NA
Boundary Change	0	7.5	4.4 Mod.	4.4 Mod.	7.5	0	4.4 Mod.	7.5	0	NA	NA	NA
Livestock Class	0.5 low	1.5	3.3 low	3.3 low	1.5	0.5 low	3.3 low	1.5	0.5 low	NA	NA	NA
Fencing	0	56.0	7.8 high	7.8 high	54.5	1.5 low	7.8 high	54.5	1.5 low	67.3	5.6	NA
Water Developments	0	26.9	35.5 low	39.6 low	22.8[2]	0	39.6 low	22.8[2]	0	NA	NA	NA
Prescribed burning	0	43.4	0	0	43.4	0	0	43.4	0	NA	NA	NA
Chemical Spraying	0	1.5	0	0	1.5	0	0	1.5	0	NA	NA	NA

1/ Intensity = Average intensity of impact computed separetly for positive and negative impacts according to the following formula: ((number of miles receiving low impact x 1) + (number of miles receiving moderate impact x 2) + (number of miles receiving high impact x 3) = 1

total miles receiving impact

and if X = 1 to 1.66 the average intensity is low, if X = 1.67 to 2.33 the average intensity is moderate, if X = 2.34 to 3.0 the average intensity is high.

2/ Includes 4.9 miles of Marble and Ash Creeks which will be fenced from livestock use entirely.

3/ Includes 6.4 miles of Marble, Ash, Silver Canyon and Sawmill Creeks which will be fenced from livestock use entirely.

TABLE 3—3

IMPACTS ON CHANNEL STABILITY

	Alternative 1 Miles of Stream Affected			Alternative 2 Miles of Stream Affected			Alternative 3 Miles of Stream Affected			Alternative 4 Miles of Stream Affected		
Proposed Change	Positive Miles Intensity 1	Negligible Miles	Negative Miles/ Intensity 1	Positive Miles/ Intensity 1	Negligible Miles	Negative Miles/ Intensity 1	Positive Miles/ Intensity 1	Negligible Miles	Negative Miles/ Intensity 1	Positive Miles Intensity 1	Negligible Miles	Negative Miles/ Intensity 1
Rest Rotation	0	4.8	6.2 low	0	8.4[2]	2.6 low	0	8.4[2]	2.6 low	NA	NA	NA
Deferred Rotation	0	43.3	0	0	43.3	0	0	43.3	0	NA	NA	NA
Stocking level	0	41.9	31.0 Mod.	21.8 low	47.0[3]	4.1 low	40.8 low	30.6[3]	1.5 Mod.	67.3 Mod.	5.5	0
Season of Use	15.4 low	2.5	5.6 low	1.3 low	10.7[3]	11.5 Mod.	1.3 low	10.7[3]	11.5 Mod.	NA	NA	NA
Boundary Change	0	7.5	4.4 Mod.	4.4 Mod.	7.5	0	4.4 Mod.	7.5	0	NA	NA	NA
Livestock Class	0.5 low	1.5	3.3 low	3.3 low	1.5	0.5 low	3.3 low	1.5	0.5 low	NA	NA	NA
Fencing	0	56.0	7.8 Mod.	7.8 Mod.	54.5	1.5 low	7.8 Mod.	54.5	1.5 low	67.3 Mod.	5.6	NA
Water Developments	0	30.9	31.5 Low	33.4 low	29.0[2]	0	33.4 low	29.0[2]	0	NA	NA	NA
Prescribed burning	0	43.4	0	0	43.4	0	0	43.4	0	NA	NA	NA
Chemical Spraying	0	1.5	0	0	1.5	0	0	1.5	0	NA	NA	NA

1/ Intensity = average intensity of impact computed separetely for positive and negative impacts according to the following formula: ((number of miles receiving low impact x 1) + (number of miles receiving moderate impact x 2) + (number of miles receiving high impact x 3) = 1)

total miles receiving impact

and if x = 1 to 1.66 then average intensity is low, if x = 1.67 to 2.33 then average intensity is moderate, if x = 2.34 to 3.0 then average intensity is high.

2/ Includes 4.9 miles of Marble and Ash Creeks which will be fenced from livestock use entirely.

3/ Includes 6.4 miles of Marble, Ash, Silver Canyon, and Sawmill Creeks which will be fenced from livestock use entirely.

Most boundary changes will not affect water quality and channel stability. Streams (4.4 miles) in fair to poor condition which will be excluded from an alloted area will be positively impacted.

Fencing which excludes 7.8 miles of stream in poor condition from livestock use will have a highly positive impact on water quality and a moderately positive impact on channel stability. Most other fencing will have a negligible impact on streams and springs.

New water developments will lessen the impacts on some streams (Appendix H and Tables 3-2 and 3-3). Where water developments are a long distance from streams, the impacts from livestock use of the stream is not expected to change. Water developments may negatively impact spring flow if locations are not carefully selected.

Impacts from chemical spraying and prescribed burning will be negligible if design restrictions and mitigation measures pertaining to these activities are followed.

Alternative 2 will have a negligible impact on ground water aquifer capacity, yield and quality.

Alternative 3 - Stocking by Condition Class

Impacts from Alternative 3 on water quality and channel stability would be similar to impacts described for Alternative 2. The only significant difference between the alternatives is that, in most allotments, there is a greater reduction in stocking levels in Alternative 3. Therefore the beneficial impact which results from large decreases in numbers occur on a greater number of stream miles under Alternative 3 (Table 3-2 and 3-3).

Alternative 4 - No Grazing

Alternative 4 would generally have a beneficial effect on water quality of streams and springs. The greatest improvement would occur in streams which are presently adversely impacted by livestock use (Appendix H and Tables 3-2 and 3-3). Livestock congregate near streams and springs because they prefer the shade, lusher vegetation, and readily available drinking water that these areas provide (Armour 1977). This congregation alters water quality by increasing water temperature, nutrients, suspended sediment, bacterial counts and by altering the timing and volume of water flow (Platts 1979).

Channel stability would improve on streams and springs which have fair to poor channel stability ratings (Appendix H and Tables 3-2 and 3-3). Implementation of Alternative 4 would allow vegetative cover to increase in many areas. This would result in increased stability of stream channels, less surface runoff and reduced sediment yield. Although no similar studies have been done in the EIS area, in Western Colorado Lusby (1978) found that complete exclusion of grazing during a 20 year study resulted in a 50 percent reduction in runoff and a 63 percent reduction in sediment yield. Greater densities of riparian vegetation would reduce stream temperature, thus improving fish habitat.

Stream and springs which presently sustain little livestock damage would receive minor beneficial effects from this alternative.

Conclusions:

Alternative 4 would have the greatest positive impacts on water resources. If Alternative 4 is not selected, Alternatives 2 or 3 would be most equally beneficial. The difference in impacts between the two alternatives is insignificant. The seasons of use proposed under Alternative 1 should be incorporated into the selected alternative.

VEGETATION

The predicted impacts to vegetation are based on evaluations of two rest rotation grazing systems within the EIS area, evaluations of wild fires and chemical brush treatments in the area, a review of published studies which were done in similar vegetation types and the professional judgement of selected field personnel.

The foundation of the analysis is the evaluation of current ecological conditions and the prediction of future conditions under the alternatives. Methodologies are described in Appendix B. Ecological conditions are modified chiefly through changes in species composition. The major elements of the Proposed Action and alternatives which may alter plant species composition are the kind of livestock, season of use, stocking levels, grazing systems and land treatments. Elements of the Proposed Action and alternatives such as allotment boundary changes do not directly affect plant species composition but would have indirect effects as the seasons of use, stocking level, etc., would change.

Due to differences in plants preferred by livestock, patterns of grazing used, methods of grazing and kind of livestock present, the impacts to vegetation will vary on each allotment. Unpalatable shrubs such as blackbrush and big sagebrush will increase in composition while palatable species such as four wing saltbush and Indian ricegrass will decrease under repeated spring grazing (of the same plants) by cattle. Herbaceous species such as lupine, penstemon and mallow will tend to be reduced by repeated grazing by sheep.

Defoliation caused by grazing is harmful to perennial plants up to the time food storage is completed. It is most harmful when plants are growing rapidly because the plants have depleted root reserves (Hormay 1970). This critical time occurs in early spring in the southern portion of the EIS area and early summer in the northern portion. Garrison (1972) states that utilization in fall or winter appears to be least detrimental to the vigor of browse species.

Stocking levels are the main determinants of the percent utilization of current growth which will occur. Garrison (1972) has stated that in general a 50 percent removal of current years growth of shrubs species is a safe level of utilization in fall and winter. The degree of use a plant can withstand varies according to species. A 60-65 percent level of use has been suggested for antelope bitterbrush (Garrison, 1953). Heady (1952) indicates that an average utilization of the key species which approximates 50 percent is a reasonable level of proper use for most grassland ranges. Since livestock graze the range selectively, however, the

most palatable plants and accessible areas will receive heavy utilization which may not be remedied by a reduced stocking level. Improved distribution of stock by means of water developments and grazing systems prevent the same palatable plants being grazed year after year beyond a proper use level.

Several land treatments have occurred in the EIS area which have been generally productive, resulting in an increased amount of palatable forage. Wildfires have occurred on Great Basin big sagebursh, Great Basin sagebrush-bitterbrush, mixed desert shrubs and blackbrush scrub habitat types. Brush has been chemically treated followed by seeding within the Great Basin big sagebrush hatitat type only. Since results vary according to the site potential, predicted impacts are discussed under the habitat type section of each alternative.

Assumptions:

The analysis of impacts to vegetation was based on the following assumptions:

1. Climatic conditions would be similar to those of the last 50 years.

2. Livestock use would be initially adjusted to the levels shown by alternative in Table 1-1 and would be further adjusted based on the monitoring of condition, trend and utilization.

3. Habitat types which would not be impacted under the Proposed Action or alternatives are the subalpine sagebrush, subalpine forest, alkali sink scrub, and Mojave creosote bush scrub. These habitat types are located entirely within unallotted areas which would continue to be ungrazed by livestock under all of the alternatives. Only a slight change would occur to the shadscale scrub habitat type due to the low response potential of the habitat. Studies of habitats in a similar precipitation zone in Arizona (Blydenstein, 1957) showed that 50 years of livestock exclusion caused no significant change in plant species composition.

4. Candidate threatened and endangered plants which would not be impacted under the Proposed Action or alternatives are (1) Mojave fish-hook cactus, due to its occurrence in an unallotted area in the Inyo Mountains; (2) Owens Valley checker-mallow, due to the lack of suitable habitat on public lands which are proposed for licensing of livestock; (3) July gold, due to its limited occurrence in a rocky location which receives no livestock use.

Alternative 1 - No Action

Condition and Trend

Under the No Action alternative, herbaceous species and palatable shrub species would decrease somewhat on about 194,000 acres which are currently licensed for livestock grazing in excess of carrying capacity. Ecological conditions would remain substantially the same as at the present but would improve from the current level on about 11,455 acres, primarily due to natural succession on recently burned or sprayed areas such as in the Adobe Valley allotment. At the end of 25 years, 211,185 acres would be in "good," 263,722 acres would be in "fair," and 63,325 acres would be in "poor" condition. Approximately 98 percent of the area would remain unchanged from its current ecological condition. Vegetation cover would remain about the same at present.

Forage Production

Annual livestock forage production would increase slightly from 18,891 AUMs to 20,109 AUMs within the area, an increase of six percent, primarily due to natural succession on recently burned or sprayed areas. Forage production on the unallotted areas would remain about the same as at present.

Habitat Types

Under the No Action alternative nine habitat types would remain essentially the same as at present: alkali sink scrub, Great Basin saltbush scrub, shadscale scrub, Nevadan pinyon-juniper woodland, Mojave creosote bush scrub, subalpine sagebrush, subalpine forest, alkali marsh, and northern juniper woodland. There would be some improvements in ecological condition on the alkali meadow, Great Basin big sagebrush, Great Basin sagebrush-bitterbrush, mixed desert shrub, and blackbrush scrub primarily due to natural succession on previously sprayed or burned areas. Browse condition on about 8,512 acres of the Great Basin big sagebrush-bitterbrush would decline due to overuse by mule deer. Continuing to license sheep on the Bishop Creek and Round Valley allotments could accelerate the deterioration on about 3,850 acres within this type. Projected ecological range conditions for each habitat type are given in Table 3-4.

Threatened and Endangered Plants

Under the No Action alternative, four candidate threatened or endangered plant species would be impacted by livestock grazing: Mono buckwheat, Fish Slough milkvetch, John's locoweed and spring-loving centaury. Populations of Fish Slough milkvetch and spring-loving centaury are currently protected within grazing exclosures. Continued livestock grazing probably prevents these plants from expanding into adjacent unprotected suitable habitat. Since the impacts to John's locoweed at current levels of grazing are unknown, no prediction of impacts can be made under the No Action alternative. Individual plants of the annual forb, Mono buckwheat, would probably continue to be destroyed by sheep use, but since the vigor of the population is primarily dependent on precipitation, it is unknown whether continued sheep grazing would adversely affect the species as a whole.

Conclusions:

Under the No Action alternative, vegetation would remain similar to the present. After 25 years there would be a slight increase in forage production and some improvement in ecological condition from natural succession on burns and sprays.

Alternative 2 - Proposed Action

Condition and Trend

Under the Proposed Action, herbaceous species and palatable shrub species would increase. Vegetative cover would increase somewhat. Ecological range conditions would improve on 79,797 acres or about 15 percent of the EIS area. At the end of

TABLE 3—4

PROJECTED ECOLOGICAL RANGE CONDITIONS
OF EACH HABITAT TYPE

Habitat Type Habitat Type	Condition Class	Current	Alt. 1 No Action	Alt. 2 Proposed Action	Alt. 3 Stocking by Condition	Alt. 4 No Grazing
Alkali Meadow	Good	1503	1728	3108	4260	4280
(5377 acres)	Fair	2307	2222	1397	909	1097
	Poor	1567	1427	812	208	0
Alkali Sink Scrub	Good	5718	5718	5718	5718	5718
(6816 acres)	Fair	567	567	620	620	700
	Poor	531	531	478	478	398
Great Basin Saltbush Scrub	Good	6792	6792	12677	13620	13850
(16752 acres)	Fair	8934	8934	3306	2876	2646
	Poor	1026	1062	769	256	256
Shadscale Scrub	Good	58386	58820	70987	78741	84774
(130371 acres)	Fair	64384	63473	51278	44789	39652
	Poor	7601	8084	8106	6841	5945
Great Basin Big Sagebrush	Good	15129	18607	21932	28335	34100
(81303 acres)	Fair	24042	30966	45191	40866	40609
	Poor	42132	31730	14180	12102	6594
Great Basin Big Sagebrush -	Good	31010	37278	41413	66286	77029
Bitterbrush (93812 acres)	Fair	55054	51870	46633	25278	16265
	Poor	7748	4664	5766	2248	518
Mixed Desert Shrub	Good	15617	16480	48257	77305	84475
(111584 acres)	Fair	91302	89728	59407	33135	26193
	Poor	4665	5376	3920	1144	916
Blackbrush Scrub	Good	5093	5293	15082	17615	12550
(25752 acres)	Fair	13785	9973	9362	6829	12475
	Poor	6874	10486	1308	1308	727
Nevadan Pinyon-Juniper	Good	42986	42946	42962	44138	45186
Woodland (47863 acres)	Fair	3571	4917	4901	3725	2677
	Poor	1306	0	0	0	0
Mojave Creosote Bush Scrub	Good	11437	11437	11437	11437	11437
(11988 acres)	Fair	551	551	551	551	551
	Poor	0	0	0	0	0
Subalpine Sagebrush	Good	2925	2925	2925	2925	2925
(2925 acres)	Fair	0	0	0	0	0
	Poor	0	0	0	0	0
Subalpine Forest	Good	1260	1260	1260	1260	1260
(1260 acres)	Fair	0	0	0	0	0
	Poor	0	0	0	0	0
Alkali Marsh	Good	123	123	123	123	123
(123 acres)	Fair	0	0	0	0	0
	Poor	0	0	0	0	0
Northern Juniper Woodland	Good	0	0	0	236	353
(471 acres)	Fair	471	471	471	235	118
	Poor	0	0	0	0	0
	TOTALS					
Total acres classified into	Good	197979	209407	277881	351999	378060
habitat types: 536,387 1/	Fair	264968	263672	223117	159813	142986
	Poor	74450	63360	35339	24585	15354

1/ Does not include rock outcrops, playas, etc.

25 years, there would be 279,527 acres in "good," 223,151 acres in "fair," and 35,554 acres in "poor" ecological condition. Current and projected ecological range conditions by allotment and range site are detailed in Appendix J.

Forage Production

As range conditions improve, livestock forage production would increase. Livestock forage production would increase about 26 percent for a total of 23,852 AUMs annually at the end of 25 years. Appendix L shows projection of future forage production for each allotment.

Habitat Types

1. Great Basin big sagebrush

Prescription burning of 3,833 acres would result in short-term changes to species composition. These previously burned areas are presently dominated by a mixed needlegrass-rabbitbrush community. Periodic burning would temporarily remove the rabbitbrush but leave the native needlegrass. Natural plant succession toward a sagebrush dominated climax would be arrested temporarily by the burning. However, a return to the pre-burn community would occur in the long-term. Harniss and Murray (1973) found that sagebrush had re-established in a 30 year old burn in Idaho. They found that herbaceous species increased the first twelve years following fire, then declined as sagebrush re-established. Blaisdell (1953) found that burning temporarily weakened perennial grasses.

Evaluations of a 22 year old fire on sagebrush-bunchgrass range in the EIS area indicated that big sagebrush had successfully re-established although it was not the dominant plant species as in the pre-burn community. Perennial bunchgrasses and rabbitbrush were the dominants. Livestock carrying capacities had increased from 88 acres/AUM to 7 acres/AUM on a sandy sagebrush site; however, within the same burn, no increase in carrying capacity occurred on a loamy site dominated by antelope bitterbrush.

Seven thousand, three hundred and sixty acres which would be chemically treated would have increased amounts of Indian ricegrass and rabbitbrush and decreased amounts of big sagebrush. Composition would change from 90 percent big sagebrush and 10 percent other species to about 70 percent Indian ricegrass, 15 percent rabbitbrush and 15 percent big sagebrush. Grazing would need to be deferred to two years by modifying the pasture rotation (Adobe Valley) and by temporary fencing (Granite Mountain). Excluding livestock from the treated areas would insignificantly affect the carrying capacity of these allotments. Aerial seeding would result in increased amounts of Indian ricegrass on 14,720 acres. Composition would change from 95 percent big sagebrush, 5 percent other species, to about 75 percent big sagebrush, 25 percent Indian ricegrass.

Chemical brush treatments within the EIS area have had nearly identical effects to those of fire on sagebrush-bunchgrass ranges in the EIS area. A sandy site sprayed in 1967 for brush control showed an increase in carrying capacity from 350 acres/AUM to 7 acres/AUM twelve years later. Perennial forbs would not be affected by the treatment since they are not present in significant amounts

within the area to be treated. Annual forbs would not be impacted since the spraying would occur in fall after the plants have dried up. Spraying leaves dead branches above ground which provide protection for the establishment of desirable grasses such as Indian ricegrass which would be seeded in the treated area.

Rotation grazing would be applied to this habitat type within the Alabama Hills, Independence, Adobe Valley and Ash Creek allotment with the objective of improving forage production and ecological range condition. Approximately one-half of the Alabama Hills and Independence allotments would be deferred until the seed-ripe date of the key forage species, desert needlegrass and spiny hopsage. Portions of the Ash Creek and Adobe Valley allotments would be rested at least one full season. Bunchgrasses have been found to yield significantly higher under deferment and harvesting at the end of the growing season than when frequently clipped during the growing season. (Lang and Barnes, 1942, cited in Hickey, 1966). Hormay (1970) states that periodic complete rest allows the plant to store carbohydrates, produce seed, and establish seedlings. He found that continuous grazing under stocking level resulted in the more palatable and accessible plant disappearing from the stand. Systematic grazing which tied to the phenological stages of the key plants is apparently more important than regulating the stocking rate.

2. Great Basin big sagebrush-bitterbrush

About 7,000 acres which would be prescription burned would remain substantially unchanged. These previously burned areas are presently dominated by a mixed needlegrass-rabbitbrush plant community. Periodic burning would temporarily remove the rabbitbrush. Natural plant succession toward a big sagebrush-bitterbrush dominated community would be halted by the burning.

Approximately 8,762 acres which would be under rest-rotation grazing management would have an increase in the amounts and an improvement in the vigor of desert needlegrass, perennial forbs and palatable shrubs, such as spiny hopsage and winterfat.

Nine hundred forty three acres which would not be grazed by livestock would continue to deteriorate due to winter deer use in excess of carrying capacity.

Cattle would be used as a management tool to improve the browse condition of bitterbrush of deer winter ranges on four allotments (Round Valley, Wells Meadow, Sherwin, and Marble Creek). Moderate cropping by cattle has been shown to be an effective method of modifying the growth form of bitterbrush. Nord (1965) found that cattle grazing reduced bitterbrush heights by 50 percent and crown spreads by 40 percent. Regular pruning of the woody stems promotes branching, resulting in a fuller, hedgelike growth form which offers protection for a significant proportion (15-20 percent) of each year's forage. Bitterbrush photosynthesis - the manufacturing of plant food - can continue even under fairly heavy grazing pressure. In addition, more of the annual growth is available to grazing animals due to the reduced stature of the plant. Plant vigor improves and mortality within the stands decreases.

An evaluation of 200 plants photographed yearly within the Wells Meadow allotment rest-rotation grazing system revealed that approximately 30 percent of the bitterbrush plants have improved growth forms since 1967 when the AMP was implemented. A definite trend toward tree-like decadent growth forms was rated in the area outside the allotment which received grazing use from mule deer only.

3. Blackbrush scrub

Thirty-nine percent of the blackbrush habitat would remain substantially the same as at present because most of this habitat exists as a closed stand which discourages seedling survival of other species.

Approximately 8,021 acres which would be prescription burned would have increased amounts of desert needlegrass, Nevada ephedra, California buckwheat and round-leaved rabbitbrush. Composition would change from 95 percent blackbrush and 5 percent other species to approximately 20 percent blackbrush, 20 percent desert needlegrass, 20 percent California buckwheat and 40 percent other species. Annual forbs which would increase dramatically for a few years following fire would decrease as perennial shrub and grass species re-established. Invasion of undesirable annuals such as Russian thistle and halogeton has not occured on recent burns in this habitat type, therfore no increase in these species is anticipated to result from the burning.

Evaluations of blackbrush communities following fire in Utah (Bowns, 1976) and Southern Nevada (Jenson, 1960) determined that (1) blackbrush is destroyed by fire, (2) annual species increase significantly the first two or three years following a fire, (3) blackbrush does not agressively re-establish itself, and (4) replacement shrubs on the burns were largely undesirable. Observations of burned-over blackbrush stands within the EIS area confirmed the first three conditions of the studies; however, it was noted that the replacement shrubs had a much higher forage value than blackbrush. Blackbrush was replaced by palatable shrubs such as California buckwheat and Nevada ephedra as well as round-leaved rabbitbrush, an undesirable. Livestock and Tule elk grazing capacities increased from about 200 acres/AUM to 16 acres/AUM.

4. Mixed desert shrub

Approximately 9,979 acres which would be prescription bruned would have increased amounts of desert needlegrass, Nevada ephedra, California buckwheat, and round-leaved rabbitbrush. Composition would change from about 5 percent desert needlegrass and 95 percent mixed shrub species to 20 percent desert needlegrass and 80 percent mixed shrub species. Burning would remove blackbrush, spiny hopsage and Cooper's goldenbush. Annual forbs which would increase dramatically for a few years following fire would eventually decrease as perennial shrub and grass species re-established.

The remainder of the mixed desert shrub habitat type would be substantially unchanged although increases in perennial forbs, palatable shrubs, and desert needlegrass would occur on 32,114 acres under deferred rotation grazing management.

Impacts to the mixed desert shrub habitat type due to grazing system would be those occurring to the Great Basin big sagebrush habitat type; however, improvements would be slower due to the lower response potential of the sites.

5. Great Basin saltbush scrub

Five thousand four hundred and fourteen acres which would be under rest-rotation grazing management would improve from fair to good condition. Of the 2,711 acres which would be under deferred rotation management, 728 acres would improve one condition class. Hutchings and Stewart (1953) recommend a grazing system which allows for spring deferment on salt desert shrub ranges in the intermountain region.

6. Alkali Meadow

Under the Proposed Action an increase in rubber rabbitbrush would occur on about 1,000 acres which were previously sprayed, and a slight increase in perennial forbs and grasses would occur on 490 acres.

Threatened and Endangered Plants

Under the Proposed Action, four candidate threatened or endangered plant species would be impacted by livestock grazing: Mono buckwheat, John's locoweed, Fish Slough milk vetch and spring-loving centuary. The latter two plants would probably be prevented from expanding into suitable habitat adjacent to the protected location.

Impacts to John's locoweed which would result form the Proposed Action are undetermined at the present, but a monitoring study is in progress. Licensed use by livestock would be reduced on the Hot Creek, Long Valley, and Wilfred Creek allotments by 50 percent, 36 percent, and 20 percent respectively which could result in less utilization of the plants. Kind of livestock would continue to be cattle. Livestock turnout dates would be about the same as at present except on the Wilfred Creek allotment where the turnout date would be two weeks later than at present. No prescribed burns or chemical sprays are proposed within the range of John's locoweed.

Impacts to Mono buckwheat resulting from the Proposed Action are generally not known; however it is known that the plant prefers disturbed sites such as graded roadsides. Good ecological conditions with a species composition of sagebrush and bunchgrass probably does not favor the expansion of this species beyond its present occurrence. Since the occurrence of this annual forb is so variable, depending on the year's precipitation, it is very difficult to predict the impacts of the proposed grazing management. Livestock use levels, kinds of livestock, and seasons of use would generally be similar to the current situation. Chemical sprays are proposed in two sagebrush communities located on habitat which is probably suitable for Mono buckwheat; however, since the chemical treatment would occur in the late fall, virtually all the annual forbs would have dried up. Before any burn or chemical spray is done, an environmental assessment will be completed. It will be necessary to address the impacts of these actions on the germination and the potential growth capability of the sprayed or burned seeds of Eriogonum ampullaceum (Mono buckwheat). Mitigating measures will be determined to prevent the destruction of essential habitat.

Conclusions:

The Proposed Action would result in a net benefit to the vegetation of the EIS area. There would be an overall increase in vegetative cover. Ecological conditions would improve on 79,797 acres. Livestock forage production would increase 26 percent over current levels. There would be short term losses of 7,360 acres of the Great Basin big sagebrush habitat type, 8,021 acres of blackbrush scrub habitat and 9,979 acres of mixed desert shrub habitat type. Improvements in the browse condition on 8,762 acres of bitterbrush range would occur. Impacts to threatened and endangered plants are generally not known.

Alternative 3 - Stocking by Condition Class

Condition and Trend

Under the Stocking by Condition Class alternative, herbaceous species and palatable shrub species would increase due to the reduced grazing pressure on allotments in fair and poor condition. Ecological conditions would improve on 153,941 acres, approximately 50 percent more increase than under the Proposed Action. The largest improvement in ecological condition would be on those allotments in fair condition where the utilization of key forage species would be approximately 30 percent. In Wyoming, key forage species increased by 23 percent when grazed at approximately a 30 percent level of utilization under several different grazing systems (Gibbens and Fisser, 1975). At the end of 25 years, 353,671 acres (65.7 percent of the EIS area) would be in "good," 158,857 acres (29.5 percent) would be in "fair," and 25,704 acres (4.8 percent would be in "poor" ecological condition.

Forage Production

Annual forage production for livestock would increase as ecological conditions improved. An increase of about 7,726 AUMs or 41 percent over current levels is anticipated including increases in forage due to prescribed burning and chemical brush sprays similar to those of the Proposed Action.

Habitat Types

Impacts to habitat types would be virtually the same under the Proposed Action the only difference being the acreage by condition class for each habitat type as shown in Table 3-4.

Threatened and Endangered Plants

Under the Stocking by Condition Class alternative impacts to Mono buckwheat, Fish Slough milk vetch and spring-loving centaury would be the same as under the Proposed Action.

Impacts to John's locoweed are generally not known; however, licensed use by livestock would be reduced on the Hot Creek and Long Valley allotments by 62 percent and 68 percent respectively. No livestock grazing would occur in the

Wilfred Creek allotment for five years. Utilization of most plants within the Hot Creek and Long Valley allotments would be less than under the No Action or Proposed Action alternative; however, utilization of John's locoweed might not be proportionately reduced if the plant has a high palatability.

Conclusions:

This alternative would be beneficial for vegetation generally. Increased amounts of vegetative cover, herbaceous species and palatable shrubs would result from the reduced levels of grazing. Range conditions would improve at a faster rate than under the Proposed Action. A total of 153,941 acres would improve in condition. Livestock forage production would increase by 41 percent over current levels. Although known impacts to threatened and endangered plants are less understood, those species being grazed at present would likely improve where grazing levels are reduced.

Alternative 4 - No Grazing

Condition and Trend

Under the No Grazing alternative, more plants would be able to complete the phenological stages of flowering, seed production, seed dissemination and root storage than under the other alternatives. Ecological conditions would improve on 180,157 acres or about 33% of the area. Conditions would be static on 358,075 acres or 67 percent of the area. At the end of 25 years there would be 379,887 acres in good, 142,991 in "fair", and 15,354 acres in "poor" condition. The areas which would remain in poor condition are located on low potential sites which have monotypic stands of shrubs and lack nearby seed sources for herbaceous species.

Forage Production

Annual production of forage for livestock would increase by 7,193 AUMs or about 38 percent over the current levels. At the end of 25 years annual livestock forage production would be 26,084 AUMs.

Habitat Types

Impacts to habitat types would generally be beneficial; however about 7,693 acres of Great Basin big sagebrush-bitterbrush located in the Sherwin, Wells Meadow, Round Valley allotments and the Bishop Unalloted area would continue to show a declining trend in the condition of the browse (Table 3-5). Ecological condition would improve somewhat due to a more diverse species composition caused by the absence of livestock grazing, but the growth form and productivity of the bitterbrush would deteriorate over the present condition. This decline is due to over-utilization by the Sherwin and Buttermilk deer herds which are present in numbers far in excess of carrying capacity during winter.

Threatened and Endangered Plants

Under the No Grazing alternative there would exist a potential for beneficial impacts to those plants shown in Table 2-3 which occur in areas currently grazed. Since the impact of current levels of livestock grazing on these plants is currently

being studied, the impact of removing livestock cannot yet be predicted. The plants most likely to benefit from the removal of livestock from the public lands are Mono buckwheat, John's locoweed, spring-loving century and Fish Slough milk vetch. The primary benefit to the latter two plants would be the expansion of their range into suitable habitat outside the grazing exclosure at Fish Slough.

Conclusions:

Impacts to vegetation would be most beneficial under this alternative. Total vegetative cover would increase over current levels, herbaceous species and palatable shrub species would increase over current levels and ecological range conditions would improve on 180,157 acres. Impacts to threatened and endangered plants are generally less known, but there would be a potential for positive impacts on four species by reducing the current grazing pressure.

WILDLIFE

The analysis presented in this section is based primarily upon information gathered during the 1978 wildlife and range vegetation inventories of the EIS area, for example, presence, distribution, relative densities, and use of habitats by wildlife; distribution and ecological condition of terrestrial habitats; qualitative evaluations of riparian and aquatic habitats. Once gathered, this data was analyzed in terms of habitat condition, forage availability and demand by wild ungulates, seasons of use by selected species (especially crucial periods such as calving seasons, hatching peaks, etc.), environmental limiting factors, species diversity and density in selected habitats, etc. These analyses served as the proximate foundation for the analysis presented below. This analysis is mainly of a qualitative nature and is developed through a comparison and extrapolation of impacts observed by the authors as well as reports from scientific literature and other environmental impact statements.

Assumptions:

The wildlife analysis is based upon the following assumptions:

1. Consumable forage was allocated between sheep, cattle, deer and elk only.

2. All water developments would have wildlife access and would be sited away from natural sources such as streams and springs.

3. Chemical treatments would cover large areas of vegetation, except in sage grouse habitat.

4. Prescribed burns would be designed to provide a slow irregular burn pattern.

5. Generally stocking at carrying capacity would retard the rate of natural succession but would not stop or reverse the trend toward climax.

6. Class of livestock to be run on any particular allotment would not change immediately, even though this option is presented for several allotments.

7. The aquatic habitat is generally rated in fair to good condition in terms of water quality despite many years of grazing. Only a very few miles of stream (identified below) are negatively affected at the present. Thus it is assumed that the aquatic wildlife attendant to that habitat is also in fair to good condition and will not be significantly affected by the future grazing management proposed in this EIS. Aquatic wildlife is not therefore discussed futher in this document.

8. As no endangered, threatened, or sensitive wildlife species are known to reside on public lands under grazing management in the EIS area, there would be no impacts to this category of wildlife. This category of wildlife will not be discussed further in this document.

The impacts of various types, levels, and elements of grazing management on wildlife are presented below. Long-term summary predictions (25 years) of wildlife habitat ecological condition under the four alternatives are presented in Table 1-7. A more detailed account of the future habitat conditions for mule deer, tule elk, and sage grouse is given in the Table 3-5. A summary impact analysis by species group and habitat is presented in Tables 3-6 and 3-7.

Alternative 1 - No Action

Under this alternative there would be no changes in stocking levels, seasons of use, management levels boundaries, etc. Present stocking levels and seasons of use are moderately to highly detrimental to several deer herds, (already over the estimated deer carrying capacity of their range, Table 2-4), sage grouse, other upland game, and the sagebrush-bitterbrush habitat (27 percent in "good" ecological condition, Table 3-5). A total of 21,010 AUMs of forage would continue to be licensed to livestock. There would be no allowances made for any wildlife species although it is estimated that approximately 2,684 AUMs of forage would be consumed annually by deer and elk plus an unknown amount of other wildlife.

Under the No Action Alternative the licensed use is 1,778 AUMs over the estimated livestock carrying capacity. Only 11,455 acres are predicted to improve to good in 25 years under this alternative (Table 1-7). This basically static trend is a reflection of interaction between the factors of over allocation, increased forage production on previously treated areas, partial and non-use, etc. Complete use of the licensed allocation in certain allotments, e.g. Fish Slough, would cause a significant deterioration of wildlife habitat.

The range improvements presented in Table 1-5 would not be implemented under this alternative.

Existing water developments are relatively unimportant to deer and elk which, being highly mobil, have access to the plentiful natural water sources. Tanks and troughs, with overflows and/or leaks, are and would be beneficial to both upland game and non-game. When adjacent to cover they provide a focal point in the range of quail, chucker, localized rodent populations, etc. Negative aspects of existing tanks and troughs are that they pose a safety hazard to small wildlife (drowning) and they have aided in the access of livestock to areas previously reserved to

TABLE 3—5
25 YEAR PROJECTIONS OF HABITAT CONDITIONS

MULE DEER BROWSE

Herd	Trend (ac.)	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Casa Diablo	Improve		2160	2160	25038
	Decline	25038	22878	22878	0
	Static	22388	22388	22388	22388
Mono Lake/Casa Diablo	Improve	0	0	0	0
	Decline	0	0	0	0
	Static	2843	2843	2843	2843
Sherwin Grade	Improve	358	2752	2752	0
	Decline	1923	364	364	3116
	Static	1633	868	868	868
Buttermilk	Improve	0	3850	3850	0
	Decline	4577	727	727	4577
	Static	6261	7659	7659	7659
Goodale	Improve	0	0	0	3385
	Decline	3385	3385	3385	0
	Static	13307	13307	13307	13307
Monache	Improve	0	0	0	0
	Decline	0	0	0	0
	Static	2654	2654	2654	2654
Inyo Mountain	Improve	0	0	0	0
	Decline	0	0	0	0
	Static	18036	18036	18036	18036

TULE ELK HABITAT

Herd	Ecological Condition (ac.)	Alternative 1	Alternative 2	Alternative 3	Alternative 5
Bishop	Good	7593	7593	7593	7593
	Fair	671	671	671	671
	Poor	0	0	0	0
Tinemaha	Good	2227	2962	4108	6130
	Fair	13211	12476	11330	9308
	Poor	0	0	0	0
Goodale	Good	3125	4345	5593	5451
	Fair	3055	2385	1137	729
	Poor	1733	1183	1183	0
Independence	Good	3384	3384	3559	3785
	Fair	1133	1133	958	732
	Poor	0	0	0	0
Mt. Whitney	Good	2268	5521	8774	8774
	Fair	7915	5562	3214	3214
	Poor	1805	905	0	0

SAGE GROUSE HABITAT

Population					
Adobe Valley/Granite Mountain	Good	4950	5305	5305	7320
	Fair	2720	1260	1260	1113
	Poor	1060	2155	2155	287
Long Valley/Crowley Lake	Good	3557	3763	9505	11815
	Fair	7960	9182	5353	3234
	Poor	3822	2394	481	290

TABLE 3—6

IMPACTS ON WILDLIFE FROM RANGE DEVELOPMENTS

Group	Development	Area Affected				Nature and Significance of Impacts 1/			
		Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Deer and Tule Elk	Water Developments	62	60	60	Unknown	-L	-L	-L	+L
	Fences (miles)	126	73	73	Unknown	-L	-L	-L	-L
	Prescribed Burns (Acres)	0	8102	8102	0	NA	+L	+L	NA
	Chemical Spraying (Acres)	0	856	856	0	NA	N	N	NA
	Seeding (Acres)	0	3775	3775	0	NA	N	N	NA
Upland Game	Water Developments	62	60	60	Unknown	+L	+M	+M	+L
	Fences (Miles)	126	147	147	Unknown	+N	+N	+N	+N
	Prescribed Burns (Acres)	0	29000	29000	0	NA	+M	+M	NA
	Chemical Spraying (Acres)	0	7360	7360	0	NA	-L	-L	NA
	Seeding (Acres)	0	14702	14702	0	NA	+L	+L	NA
Aquatic Wildlife	Water Developments	14	19	19	Unknown	-L	+L	+L	+L
	Fence (Miles)	0	65	65	Unknown	NA	+L	+L	+L
	Prescribed Burns (Acres)	0	100	100	0	NA	N	N	NA
	Chemical Spraying (Acres)	0	2	2	0	NA	N	N	NA
Non-game	Water Developments	62	60	60	Unknown	+L	+L	+L	+L
	Fences (Miles)	126	147	147	Unknown	+N	+N	+N	+N
	Prescribed Burns (Acres)	0	2900	2900	0	NA	+L	+L	NA
	Chemical Spraying (Acres)	0	7360	7360	0	NA	-L	-L	NA
	Seeding (Acres)	0	14702	14702	0	NA	+L	+L	NA
Habitat									
Riparian/Aquatic	Water Developments	14	19	19	Unknown	-L	+L	+L	NA
	Fences (Miles)	0	65	65	0	NA	+L	+L	NA
	Burns (Acres)	0	100	100	0	NA	-N	-N	NA
	Chemical Spraying (Acres)	0	0	0	0	NA	NA	NA	NA
Sagebrush/Bitterbrush	Water Developments	3	16	16	Unknown	-N	+L	+L	NA
	Fences (Miles)	9	13	13	Unknown	+N	+N	+N	NA
	Burns (Acres)	0	0	0	0	NA	NA	NA	NA
	Chemical Spraying (Acres)	0	0	0	0	NA	NA	NA	NA
Pinyon/Juniper	Water Developments	0	3	3	0	NA	+N	+N	NA
	Fences (Miles)	2	2	2	Unknown	+N	+N	+N	NA
	Burns (Acres)	0	0	0	0	NA	NA	NA	NA
	Chemical Spraying (Acres)	0	0	0	0	NA	NA	NA	NA

1/ H = high M = moderate? L = Low N = negligible NA = Non-applicable. The terms high, moderate, and low are relative to each other.

TABLE 3-7

IMPACTS OF GRAZING MANAGEMENT ELEMENTS ON WILDLIFE

Group	Herd Unit	Impacting Action	Nature and Significance of Impacts 1/			
			Alt. 1	Alt. 2	Alt. 3	Alt. 4
Deer	Sherwin	Stocking Rate	-M	-M	-L	NA
		Season of Use	-H	-M	-M	NA
		Rest Rotation	+L	+L	+L	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	NA	NA	NA	NA
	Buttermilk	Stocking Rate	-L	-M	-L	NA
		Season of Use	-H	+L	+L	NA
		Rest Rotation	NA	+L	+L	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	NA	NA	NA	NA
	Goodale	Stocking Rate	-H	-M	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	+L	+L	NA
		Less Intensive	+L	+L	+L	NA
	Monache	Stocking Rate	-N	-N	-N	NA
		Season of Use	-N	-N	-N	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	+L	+L	NA
		Less Intensive	NA	NA	NA	NA
	Casa Diablo/Mono Lake	Stocking Rate	-M	-L	-L	NA
		Season of Use	-H	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+L	+L	+L	NA
	Casa Diablo	Stocking Rate	-M	-M	-L	NA
		Season of Use	-M	-L	-L	NA
		Rest Rotation	NA	+L	+L	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+L	+L	+L	NA
Tule Elk	Bishop	Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+L	+L	+L	NA
	Tinemaha	Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+L	+L	+L	NA
	Goodale	Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	N	N	NA
		Less Intensive	+L	+L	+L	NA

TABLE 3—7 Cont'd.

	Independence	Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+L	+L	+L	NA
	Mt. Whitney	Stocking Rate	UNK	UNK	UNK	NA
		Season of Use	UNK	UNK	UNK	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	UNK	UNK	NA
		Less Intensive	NA	NA	UNK	NA
Sage Grouse	Crowley Lake	Stocking Rate	-M	-M	+L	NA
		Season of Use	-M	-M	-M	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	NA	NA	NA
		Less Intensive	+N	+L	+L	NA
Other Upland Game		Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	+N	+L	+M	NA
		Deferred Rotation	NA	+L	+M	NA
		Less Intensive	+N	+L	+M	NA
Non-game		Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	+N	+M	+H	NA
		Deferred Rotation	NA	+M	+H	NA
Habitat		Less Intensive	+N	+M	+H	NA
Riparian/Aquatic		Stocking Rate	-L	-L	-L	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	+N	+L	+L	NA
		Deferred Rotation	NA	+L	+L	NA
		Less Intensive	-L	-L	-L	NA
Sagebrush/Bitterbrush		Stocking Rate	-M	+L	+M	NA
		Season of Use	-L	-L	-L	NA
		Rest Rotation	+N	+L	+L	NA
		Deferred Rotation	NA	+L	+L	NA
		Less Intensive	+N	+N	+L	NA
Pinyon/Juniper		Stocking Rate	-N	-N	-N	NA
		Season of Use	-N	-N	-N	NA
		Rest Rotation	NA	NA	NA	NA
		Deferred Rotation	NA	+N	+N	NA
		Less Intensive	+N	+N	+N	NA

1/ H = High; M = Moderate; L = Low; N = Negligible NA = Non-applicable. The terms high, moderate, and low are relative to each other

wildlife, thus increasing pressures on both wildlife and their habitats. This negative impact is intensified in some areas, e.g. Marble Creek, Adobe Creek, and various other areas, by existing livestock water uses which are damaging to the environment. An estimated 992 acres at or adjacent to water developments have been degraded due to excessive livestock use.

Twenty-seven miles of existing fence in critical tule elk habitat are not built to the specifications of the Design Restriction No. 8 and thus pose a risk of entanglement and death. The lack of fences protecting riparian habitat from direct, excessive, livestock use results in significant damage to certain areas and a constant damage potential for several other areas (Appendix D).

Conclusions:

Continuance of present management would result in maintenance of a range with over 60 percent of the acreage rated in fair to poor ecological condition. The range would continue to be over-licensed by 1,778 AUMs, an especially negative condition for certain deer herds. In addition, spring/summer seasons of use in several allotments would stress certain deer herds, sage grouse, and other upland game. Existing range facilities, fences and water developments, would continue to have a net negative impact.

Alternative 2 - Proposed Action

Deer and Tule Elk

Season of use impacts and stocking rates, frequently in conjunction, are the two most negatively impacting elements of the proposed grazing management on deer and elk. Livestock use periods which center on spring and early summer enhance real and potential competition for high protein new growth at a time when wild and domestic ungulate diets converge. Spring is also a period when the nutritional needs of pregnant deer and elk, fulfilled by that new growth, are critical to successful gestation and the production of healthy young (Mackie, 1978). In addition, spring grazing in Wells Meadow, Sherwin, and Round Valley allotments, where livestock use is proposed as a tool to benefit deer through hedging of bitterbrush, is less likely to succeed when the succulent grasses favored by cattle are most available. The following allotments are proposed for seasons of use which could negatively affect deer and elk: Wells Meadow, Round Valley, Sawmill Creek, Alabama Hills, Independence, Red Mountain, Bramlette, Marble Creek, Hammil Valley, Poverty Hills, East Crater Mountain, and those allotments in the Owens Valley with "unspecified" seasons of use.

Reductions in AUM allocation would reduce impacts to wild ungulates. The continued allocation of 18,462 AUMs, however, still would pose a potential problem to deer and elk. In drought years normal foraging patterns are disrupted and elk may be observed on the valley floor and near the Owens River whereas normally they would be in the foothills and canyons. Similarly, cattle may be forced to forage critical elk use areas, e.g. calving grounds, interfering with elk foraging and, possibly, reproductive patterns. Two allotments, Sawmill Creek and Poverty Hills, presently have an over-demand on elk forage totalling 130 AUMs (see Table 2-4). Grazing by livestock to carrying capacity, especially in summer, may exacerbate the problem of wildlife overuse in these allotments by forcing cattle

into areas used normally by elk. This is especially critical for Sawmill Creek where deer forage demand is 113 AUMs greater than availability. Competition in that allotment between deer, elk and cattle for forage, cover, space, etc. suggests the problem is very serious.

In contrast to elk, deer and cattle overlap regularly in their use of certain allotments, particularly in years when a heavy snowpack in the mountains retards spring migration to the summer range. As with elk, the stocking rate impact tends to work, at least partially, in conjunction with that of season of use. These impacts to deer would be most serious in those allotments where there is an excess of deer use compared to deer forage availability, for example, Sherwin, Wells Meadow, Round Valley, Sawmill Creek, and Shannon Canyon/Baker Creek (Table 2-4). Overgrazing by livestock is proposed in Sherwin and Wells Meadow, to hedge decadent bitterbrush. This would result annually in a direct loss of 395 AUMs. Although a limited amount of hedging has been accomplished, the stocking rate, in conjunction with an inappropriate use period, would work against the best interest of the Sherwin deer herd. This direct loss of forage to livestock would be further compounded by the damage to forage seedlings, for example, bitterbrush, the success of which will determine the long-term condition of the habitat. Seedlings may be lost not only through foraging but also through trampling (Pearson, 1975).

Proposed reductions in stocking and utilization levels would, as stated above, reduce the grazing impact on wild ungulates. These reductions plus regular rest periods for each pasture under intensive management are predicted (Table 3-7) to improve range condition. This improvement, resulting from rest-rotation and deferred rotation grazing systems, would enhance all or portions of the winter range of five deer herds (Casa Diablo, Bishop, Sherwin, Monache, and Goodale) and the range of three elk herds (Lone Pine, Mt. Whitney, and Goodale). Wild ungulates may also benefit from their ability to use pastures under rest treatment. However, the response of wild ungulates to intensive management is poorly understood (Mackie, 1978).

Range management projects proposed under this alternative would have a mixed effect (see Table 3-6). Natural water sources in the EIS area are adequate for wild ungulates. Although livestock waters could be used by deer and elk and would result in more evenly distributed livestock grazing pressure, the probable use of new areas by livestock and increased grazing in others would cause increased overall competition for forage and space. Forty-seven miles of proposed fence are in either critical deer winter range or cut across deer migration routes. An additional six miles of fence is proposed in critical Tule elk winter and calving range. Although a design restriction (No. 8) would alleviate some of the impact, there would be an increased probability of entanglement and displacement of normal migratory patterns. The opening up of an estimated 8,102 acres of monotypic blackbush in the Owens Valley through prescribed burning would primarily benefit Tule elk. Proposed burn areas do not, for the most part, coincide with deer winter ranges. Burns in the Benton Planning Unit do occur in deer migration routes and would potentially provide increased forage during the migration period. Chemical sprays and seeding would occur primarily outside the traditional use areas of wild ungulates.

Upland Game

Populations of hares and rabbits may by themselves constitute significant levels of grazing. Hansen (1972) reported for a northeastern Colorado rangeland that jackrabbits consumed the equivalent of 6.6 percent of their body weight in forage per day. The additional pressure of livestock grazing would negatively affect not only the directly competitive rabbits and hares but all other upland game as well. Leopold (1977) states that "...grazing by domestic livestock is the primary factor limiting the production of quail foods in the arid foothill ranges of California". He further points out that consumption of succulent forbs prior to seed drop (a result of spring grazing) reduces the available food supply in winter, a critical period for game birds.

A particular problem for sage grouse under this alternative is the proposed season of use in the Wilfred Creek allotment. The proposed starting date, June 1, is in the normal peak period for sage grouse hatch. Forbs eaten and crushed by livestock are very important food sources for the chicks during the first 12 weeks. Forbs are also important to adult grouse in spring and summer (Call, 1979). Although the proposed starting date would reduce the negative impacts of the existing date, there would still be a residual negative effect on the sage grouse population in terms of normal population growth.

The expected habitat improvements resulting from decreased stocking and utilization levels in combination with more intensive management should result in an increased diversity and density of food and cover. This would benefit the widespread hares and rabbits more than game birds which tend to reside in preferred habitats, usually near a water source.

The presence of water sites is attractive to quail and chukar (Edminster, 1954; Leopold, 1977) as well as other upland game. The addition of sixty new water developments would increase both the distribution and density of upland game populations, particularly chukar, by an estimated minimum of 10 percent. The 29,000 acres of upland game habitat proposed for prescribed burning should result in increased forage availability and improved habitat, including that of sage grouse (Miller, 1963; Call, 1979).

Although there would be an increased availability of certain forage plants resulting from spray projects, there would also be a loss of other forage species and cover which would negatively impact upland game, particularly sage grouse, if undetected populations occur in the spray area (Wallestad, 1975). Seeding projects are expected to benefit all wildlife residing in or adjacent to the seeding area.

Non-Game

Many non-game wildlife species are negatively affected by any significant level of livestock grazing, especially spring grazing. Non-game wildlife may, at peak numbers, require all or a substantial portion of the available forage. Hewitt, et. al. (1976) reported for a shortgrass rangeland that a single species of grasshopper, at peak numbers, consumed 26-29 percent of the total available forage. Leopold (1977), Beatley (1966) and others have demonstrated that chemical compounds found only in green, succulent, plants are requisite for successful breeding in quail and rodents. Thus the imposition of additional grazing pressure

Conclusions:

The 12 percent reduction in stocking level plus a lower average utilization would result in improved wildlife habitat in terms of both forage and cover. Proposed seasons of use would negatively impact most wildlife, particularly deer and sage grouse. Intensive management systems should positively affect the range of five deer and three elk herds plus the habitat in general although there would be temporary negative impacts to pastures under grazing. Fencing extensions would have little impact on wildlife other than a potential hazard to wild ungulates. Water development would generally benefit wildlife.

Alternative 3 - Stocking by Condition Class

The major difference betwen this alternative and the Proposed Action is the reduction in AUM allocations. Benefits to wildlife would result from the 43 percent reduction in stocking level on those allotments rated in "fair" ecological condition. These benefits would be partially cancelled as allotments reach an average "good" condition at which time stocking levels would be adjusted to that under the Proposed Action. As depicted in Table 3-5, 153,941 acres are anticipated to improve to "good" condition (75,223 acres under intensive management) over the next 25 years under this alternative, resulting in upward adjustments on at least 18 allotments. Although this would result in some reduction in wildlife populations, the final state of equilibrium would be at a higher level than present, primarily due to habitat improvement. Two allotments, Black Rock and Wildlife Creek, would be deferred from grazing for five years due to ecological condition ratings of "poor". This would positively affect most wildlife on these allotments, however, only 22,238 acres (4 percent of the EIS area) are involved.

The possible construction of approximately 150 miles of additional fence to separate allotments managed in common with U.S. Forest Service and LADWP would have the same potential impact on wild ungulates, especially deer, as those under the Proposed Action. Additional water developments might also be required with the same attendant effects described previously.

A final factor present under this and Alternative 2 is the possibility for several operators to run either cattle or sheep. In general, analysis was conducted on a particular allotment for the class of livestock presently being run. Impacts may vary according to class. Cattle tend to concentrate and abuse riparian areas but may not utilize other areas available to sheep. Sheep bedding grounds devastate small areas, similar to the overuse by cattle of land adjacent to water sources. The degree of competition from both varies with the season and may be critical for wildlife at certain seasons, for example, spring, when both wild and domestic ungulates seek out succulent vegetation, especially forbs.

Conclusions:

The impacts summarized under the Proposed Action would, in general, apply to this alternative also. The major difference would be an additional 74,144 acres of habitat in "good" ecological condition class as a result of the proposed 43 percent reduction. The possible construction of an additional 150 miles of fence could adversely affect deer and elk, especially when sited in migration or movement corridors.

Alternative 4 - No Grazing

Although grazing is not a totally negative impact, cessation of grazing on the public lands (almost 70 percent of the area) would benefit wildlife as a whole. Although certain groups, such as, deer in a few allotments and species with a preference for early successional stages resulting from treatment, are benefitted by grazing management practices, wildlife, in general, is impacted negatively. This results not only from the direct negative impacts of grazing such as competition for food and space, trampling of understory vegetation, caving in of burrows, and alteration or destruction of cover but also from the indirect negative effects on plant vigor on overgrazed range, retardation of succession, and gradual habitat degradation in heavily used areas. Mackie (1978) gives a detailed discussion of grazing impacts on wild ungulates which applies also to other types of wildlife.

Under this alternative all forage would be available to wildlife. Water developments beneficial to wildlife would be retained. Construction of up to 200 miles of fence, if necessary, would be a negative impact to deer and elk. The absence of proposed vegetation treatments would result in less future forage for certain wildlife than under Alternatives 2 and 3, while protecting the present condition of several thousands of acres of mature blackbush and sagebrush. The absence of livestock grazing would have a mixed effect but would generally be moderately to highly beneficial.

Conclusions:

Some 100,360 acres more than under the Proposed Action would advance to a "good" ecological condition class within 25 years. All classes of wildlife and habitats would improve (Table 1-7) although certain groups in certain areas, e.g., Sherwin deer herd, could be negatively impacted through a lack of grazing. The potential construction of an estimated 200 miles of fence to protect pulbic land from trespass would create a possible increased hazard to wild ungulates.

WILD HORSES

The following analysis is based on the assumption that the Montgomery Pass Wild Horse Management Plan would be fully implemented as described in Chapter 2.

Alternative 1 - No Action

No change in herd size or area of use would occur under Alternative 1. The use of forage at the level of 187 AUMs on the Adobe Valley and Bramlette allotments would continue, sufficient to maintain the present population of horses using public lands.

Alternative 2 - Proposed Action

No change in herd size would occur under Alternative 2. The use of forage at the level of 187 AUMs would continue; however, normal movements of the horses into the Adobe Valley allotment would be disrupted due to the construction of a fence along the forest boundary. The horses might use adjacent allotments (Adobe Lake or Black Lake) or take a longer route to gain access to the Adobe Valley allotment.

Alternative 3 - Stocking by Condition Class

Impacts under this alternative would be the same as under the Proposed Action.

Alternative 4 - No Grazing

Under the No Grazing alternative no change in herd size or area of use would occur. Forage availability on public lands would be somewhat increased, however, no increase in horse use is anticipated to occur because of limiting factors on the key range which is located outside the EIS area.

Conclusions:

No change in wild horse herd size or area of use would occur under any of the alternatives. Normal horse movements into the Adobe Valley allotment would be disrupted under Alternatives 2 and 3.

CULTURAL RESOURCES

Distribution and density of sites, potential impacts of each alternative, mitigation measures and Native American conerns were all factors of the analysis. The major elements (land treatment, facilities, stocking rate) of each alternative were viewed separately.

Based on the limited site inventory, it is assumed that more than 90 percent of the cultural resource sites within the EIS area have been accessible to livestock use in the past and have sustained an unquantified level of adverse impacts. Given natural factors (forage and water availability, steepness of terrain) and management practices (stock driveways, fences, allotments and pastures, water developments), as well as the gregarious nature of domestic livestock, it is clear that livestock use of the public lands is not evenly distributed. It is assumed that the potential impacts of livestock use on cultural resources are distributed proportional to the distribution of livestock. As a corollary, it is assumed that potential impacts to cultural resources are proportional to animal stocking rates. The impact of livestock use on cultural resources tends to be cumulative.

No sound data are available to relate the nature and degree of potential impacts on cultural resources to the kind of livestock. No information relating season of use to cultural resource impacts has been developed. Intensive management systems (rest rotation, deferred rotation) have not been evaluated per se, but may, in fact, serve to distribute livestock impacts more evenly through an allotment, thereby lessening the severity of potential impacts on any one location. Conversely, these systems could create new patterns of animal dispersal, causing impacts to additional cultural resources.

No properties listed in or determined eligible for inclusion in the National Register of Historic Places will be effected by any of the alternatives. Various sites within the EIS area, both known and predicted, have potential eligibility for inclusion in the National Register of Historic Places under District, thematic, or

site-specific criteria. Under a Programmatic Memorandum of Agreement betweeen the Bureau of Land Management and the Advisory Council on Historic Preservation dated January 14, 1980, full compliance with Section 106 of the National Historic Preservation Act will occur in consultation with the State Historic Preservation Officer. This process, as outlined in 36 CFR 800.4, will include identification of specific cultural resources at the project specific level, evaluation, determination of significance, determination of effect, and avoidance or mitigation procedures where necessary.

Alternative 1 - No Action

Prehistoric and Historic Resources

Under this alternative, impacts to cultural resources will continue at the existing level. Approximately 5,000 sites potentially are being impacted to some degree.

Livestock impacts on cultural resources include: displacement (vertical and horizontal) and breakage of artifacts, and mixing of depositional associations through trampling; destruction or enhanced deterioration of structures and features through rubbing; subtle changes in the depositional associations through trampling; destruction or enhanced deterioration of structures and features through rubbing; subtle changes in the depositional matrices of subsurface sites (pollen count, carbon contamination, pH level); and an acceleration of natural erosional processes.

Native American Concerns

Existing PaiuteShoshone concerns over access and the presence of unspecified plant species are not likely to be impacted by this alternative. It is possible, however, that continued decreases in range condition on some allotments would adversely affect the availability of a resource of concern to Indians.

Alternative 2 - Proposed Action

Prehistoric and Historic Resources

Under the proposed action, animal stocking rates would be reduced from the existing situation by some 12 percent. Thus, potential impacts to cultural resources would also be expected to decline by an overall figure of some 12 percent. It should be noted that stocking rates of some allotments would increase with a concomitant increase in potential impacts. The same number of sites would be impacted, but to a lesser degree (refer to Chapter 1 for stocking rate figures). There is potential for damage or destruction of surface and subsurface sites through the construction of water developments and fences. Fences and water development may alter established patterns of livestock use; a potential impact to cultural resources exists if new patterns are established. Improved access to key areas for maintenance of facilities could indirectly cause an increase in vandalism and theft of cultural resources. Removal of facilities rendered non-functional under this alternative has a potential impact on cultural resources. All sites in the path or vicinity of construction or removal of various facilities could be impacted. Pursuant to the Programmatic Memorandum of Agreement betwen the Bureau of Land Management and the Advisory Council on Historic Preservation, project specific inventory (Class III) and evaluation will take place at a later date.

Spraying and burning may affect chemical balances within site deposits. Prescribed burning may affect paleoecological associations within sites, but it should be remembered that burning is natural to much of California (differences between natural and prescribed burning were not analyzed). Artifacts and other remains can be consumed, metamorphosed or broken through the heat of fire. Fire control and suppression efforts have direct impact potential. Indirect impacts may include increased erosion (short-term) and increased stocking rates (long-term). Specific impacts will be analyzed on a project by project basis after additional inventory (Class III), pursuant to the PMOA between BLM and the Advisory Council on Historic Preservation.

Native American Concerns

Several aspects of the Proposed Action - (150 miles of fencing, 60 water developments, 36,360 acres of vegetation treatments) have the potential to adversely affect Paiute-Shoshone concerns regarding access, specific plant species availability, and the condition of certain water sources and associated riparian vegetation. However, our inability to identify the specific plant species and geographic areas that the Indians are concerned with prevents further analysis of the impact.

Alternative 3 - Stocking by Condition Class

Prehistoric and Historic Resources

With a severe reduction in forage allocations and animal stocking rates, the degree of impacts is expected to lessen by as much as 43 percent. The same sites (some 5,000) would still be impacted, and it should be noted that impacts would increase in some allotments (refer to Chapter 1 for specific forage allocation data).

Impacts to cultural resources through the construction of internal fences and water developments would be substantially the same as under the Proposed Action. Additional boundary fences and water developments would be necessary to implement the reduced stocking rates. With the additional construction, there is an increased potential for impacts to cultural resources. Boundary fences could indirectly cause livestock clustering adjacent to public lands, with additional impacts to cultural resources. Specific sites and numbers of sites potentially impacted would not be known until after project specific inventory (Class III), pursuant to the Programmatic Memorandum of Agreement between BLM and the Advisory Council on Historic Preservation.

Impacts to prehistoric resources, from chemical spraying and prescribed burning would be the same as under the Proposed Action. Project specific inventory (Class III) and analysis would occur at a later date pursuant to the Programmatic Memorandum of Agreement between BLM and the Advisory Council on Historic Preservation.

Native American Concerns

Paiute-Shoshone concerns under this alternative are expected to be similar to those listed under the Proposed Action. The additional fencing may cause greater concern among the Native Americans over continued traditional access over public lands.

Alternative 4 - No Grazing

Prehistoric and Historic Resources

Under this alternative the rate of degradation of cultural resources would be greatly reduced. As animals are removed from the public lands within the EIS area, the condition of the resources would gradually stabilize, except for natural weathering. Trampling would cease at once. Impacts through erosion would be reduced more slowly in conjunction with general watershed condition.

Boundary fencing would be necessary to implement this alternative, and obsolete fences and water developments would be removed. Construction and removal operations both have a potential impact on cultural resources. Inventory (Class III) and analysis of impacts would occur on the project level, pursuant to the Programmatic Memorandum of Agreement between the Bureau of Land Management and the Advisory Council on Historic Preservation. Mitigation of impacts from boundary fences is more difficult than for interior fences because of the generally fixed location of boundary fences.

Native American Concerns

Existing vegetation and natural water sources would be well preserved under this alternative. Paiute-Shoshone concerns regarding the availability of certain (unspecified) plants and maintenance of natural water sources and riparian areas would be significantly alleviated. Boundary fencing could have a significant effect on traditional access.

Conclusions:

Alternative 4 (No Action) would have the least impact on cultural resources of any of the alternatives. About 200 miles of boundary fencing could disturb cultural sites and normal mitigation would be complicated by the inflexibility of the location of boundary fences. Also, the access of Native Americans would be restricted. However, these impacts would be more than compensated for by the elimination of direct impacts from livestock on cultural resources and specific plant species and sites of concern to Indians.

The most damaging alternative for cultural resources would be Stocking by Condition Class. This alternative includes all of the projects and treatments of the Proposed Action plus 150 miles of boundary fencing. The negative impacts of these projects, including the additional fencing, would outweigh benefits from reduced stocking levels for both cultural resources and Native American concerns.

No Action would be better for cultural resources than the Proposed Action because the impact of the projects and treatments proposed would outweigh benefits from a 12 percent reduction in stocking.

VISUAL RESOURCES

Analysis techniques used to project impacts to visual resources consisted of professional field experience of Bureau personnel.

The degree of impact that is allowable under proposed grazing systems and range developments on visual resources would depend upon the Visual Resource Management (VRM) class of the area for which the project or grazing system is proposed. The only VRM Class I area within the EIS area presently contains no grazing systems or range improvements within its boundaries. Grazing systems and range improvements are not proposed in this area under Alternatives 2 and 3. Furthermore, design restrictions described in Chapter 1 are such that all proposed projects would meet the long-term VRM Class IV management objectives.

Without specific project locations, neither the type of impact nor the VRM class acreage impacted can be determined. Site-specific projects will be analyzed individually, using the Visual Contrast Rating System during the EA process, prior to construction.

Alternative 1 - No Action

This alternative would have negligible impacts to visual resources in the EIS area. Current grazing levels would maintain a generally stable condition over the range except in old burn areas where ecological range conditions are improving. Vegetation and soil conditions are anticipated to remain stable under this alternative.

Alternative 2 - Proposed Action

A decrease in livestock AUM allocations would have a beneficial impact to visual resources by improving and diversifying range conditions. However, rest-rotation management would have short-term negative impacts by creating a visual contrast between rested and non-rested pastures. In the long-term, though, improved plant vigor and productivity would have a beneficial effect to scenic values in all VRM classes.

The development of new water sites, which include troughs and wells, would have a low impact, both short and long-term, on visual resources. Well sites with windmills, as opposed to those with electric pumps, would have a slightly greater impact, although all proposed features would meet the VRM Class objectives in terms of their long-term effect on the overall landscape. Additionally, cattle grazing and trampling would have a visual impact to scenic values on an area of approximately 16 acres around each water site, representing a moderately adverse long-term impact to localized visual resources. The development of individual springs would alter the form, color, and texture of the vegetation in the spring area. However, re-establishment of vegetation, as called for in the design restrictions, would reduce this impact in the long-term to a level that would meet VRM Class objectives. Water for livestock use will be piped away from the spring area, so the trough will not visually impact the spring site. The construction of pipelines (if buried) would alter the line, color, and texture of the land form and vegetation in the area. Again, re-establishment of vegetation would insure that no long-term impacts will result and VRM Class objectives would be met. Unburied pipelines would have a very low long-term adverse impact to scenic values.

Fencelines would have only a slightly adverse long-term impact on visual resources, altering the line and color of the landform and vegetation by creating an unnaturally colored straight line across the landscape. They would not be overly evident in the landscape and would therefore meet the objectives for VRM Class III and IV. Fencelines would meet Class II objectives, contingent upon local environmental circumstances.

The proposed seeding of areas with native grasses would have a beneficial affect on the visual resources by creating a more lush landscape in the seeded area.

Burning and chemical spraying would have highly adverse short-term impacts, altering the form, line, color, and texture of the landform and vegetation features in the landscape and increasing the contrast between treated and untreated areas. The visual contrast would decrease over time, first as the native grass seedings establish a vegetative cover, and later as the shrubs become re-established. In the long-term burning and spraying accompanied by seeding, would result in low adverse impacts in VRM Class III areas. No vegetative manipulation programs have been proposed in VRM Class II and IV areas.

The Proposed Action would benefit visual resources by improving the ecological condition of the range. In the long-term, scenic values would generally improve due to a reduction in AUM allocations. Various range improvements, however, would have adverse impacts. Examples are visual contrasts of burned and chemically treated areas, localized visual impacts around water developments, and rest-rotation visual contrasts. Fencelines would have a low long-term impact on visual resources. Range improvements would meet VRM Class objectives in the long-term and would facilitate the overall objectives of improving visual resources and range ecology.

Alternative 3 - Stocking by Condition Class

This alternative would have significant short-term benefits for visual resources. Limited grazing would allow ranges in poor to fair condition to recover faster than they would under the Proposed Action. These improved aesthetic conditions would degrade slightly, however, as range improvements are developed in the area. Otherwise, projected range improvements and grazing systems and their impacts will remain the same as in the Proposed Action.

Alternative 4 - No Grazing

This alternative would generally benefit visual resources. Where existing facilities are removed, the sites would gradually improve through natural rehabilitation. A general improvement of the natural vegetative cover throughout the EIS area would enhance the general texture of the landscape vegetation. The several hundred miles of new boundary fences would intrude on the natural landscape and impart low long-term adverse impacts. Additionally, a vegetation contrast would be apparent where non-public lands adjoin non-grazed public lands.

Conclusions:

Alternative 1 would have negligible impacts to visual resources in the EIS area due to a stable maintenance of range conditions. Alternative 2 would benefit visual

resources in the long-term by improving scenic values of the range. Short-term adverse impacts would result from various range improvements which would still meet VRM Class objectives in the long-term. Alternative 3 would accelerate range visual resources enhancement by allowing poor to fair range conditions to recover faster than under the Proposed Action (Alternative 2). Otherwise, projected range improvements and grazing systems and their impacts would remain the same as in the Proposed Action. Alternative 4 would benefit visual resources by allowing the range to recover from current grazing activity. Protective boundary fences would incur low long-term adverse impacts, though.

RECREATION

Analysis techniques used to assess grazing activity impacts include the professional judgment of Bureau personnel supplemented by existing information on recreation use and opportunities in the EIS area.

Alternative 1 - No Action

Generally, negligible impacts to recreation activities and opportunities would result under this alternative. Current grazing levels would maintain a generally stable condition over the range, except in old burn areas where ecological range conditions are improving. Sightseeing and hunting opportunities would increase slightly in these areas due to successional development and increased cover availability for game species. Most recently, some public citizens have expressed concern over potentially adverse impacts to the geologic and scenic values in the area around the south shore of Mono Lake. Current livestock use in the area may represent a potential threat to the tufa tower formations near the shoreline. Due to lack of observable and reliable data, a monitoring program has been initiated to identify and mitigate potential damage to the geologic and scenic values of the area.

Alternative 2 - Proposed Action

The impacts of this alternative to designated recreation areas would be low to nonexistent. No livestock grazing either occurs or is proposed on Negit Island Natural Area. A fence bordering the Whitney Portal Road, the only range improvement proposed in the Alabama Hills Recreation Lands, would create a low adverse impact to scenic values. Depending on its location, vehicular access to Lone Pine Creek may be blocked.

Rest-rotation grazing would have low short-term adverse impacts to scenic values of rested areas by offering a slight contrast to adjacent utilized pastures. In the long-term, however, the improved vegetative vigor and productivity would be of positive benefit to the range and thus to scenic values.

As explained in Alternative 1, potentially adverse impacts by livestock use to scenic and geologic values in the area sough of Mono Lake are currently being investigated and monitored.

In non-developed recreation areas, water developments such as wells, troughs, and spring developments would have a slightly adverse impact to scenic values but in conjunction with design restrictions, would benefit hunting values by providing new water sources for wildlife. Livestock grazing and trampling would change plant composition and density, and increase erosion potential on approximately 16 acres around each water source.

Pipelines would have a slightly adverse short-term impact, aesthetically, but no long-term impacts after revegetation.

Constructing new fences would have a slightly adverse aesthetic impact and may restrict fishing and hunting access, hiking, and off-road (ORV) travel.

The proposed removal of certain range improvements, including fences and old water pipelines, would generally benefit sightseeing values. Seeding would generally benefit hunting and sightseeing values by providing more seed and succulent growth for small game and upland game birds and by adding a more bushy appearance to the landscape.

Burning and chemical spraying would result in highly adverse short-term impacts to sightseeing. Scenic values near Tuttle and Symmes Creek Campgrounds would be adversely affected after proposed burns. These impacts would decrease over time as native grass seedings establish a vegetative cover and later, at the shrubs become re-established. In the long-term, the treatments would have a low adverse impact on sightseeing.

Chemical spraying, accompanied by seeding, would benefit hunting by providing succulent growth and a more diverse plant community for deer, small game, and upland game birds.

In general, the implementation of grazing systems and reduced allocations to livestock would improve sightseeing by increasing vegetative cover and reducing soil disturbance in the long-term. Hunting values would also benefit from increased forage and cover for game species. Adverse impacts would be low and restricted to localized areas of range improvements and rest rotation management.

Alternative 3 - Stocking by Condition Class

This alternative would have significant short-term benefits for recreation, particularly for sightseeing and hunting by accelerating range condition recovery faster than under the Proposed Action. However, the improved aesthetic conditions would degrade slightly in localized areas as range improvements are constructed.

Alternative 4 - No Grazing

Recreation values would generally benefit under this alternative. Sightseeing values would improve, since no new livestock facilities would be built on public lands, and most existing facilities would be removed. The sites previously occupied by range facilities would gradually improve trough natural rehabitation. Streambank trampling would be eliminated, enabling vegetation to re-establish and reducing erosion into streams, thereby improving sightseeing as well as fishing opportunities.

A general improvement of natural vegetative cover throughout the EIS area would alos enhance sightseeing values. However, the addition of new boundary fences, if constructed would have slight adverse impacts to scenic values and could also restrict hunting and fishing access, hiking, and ORV travel.

Conclusions:

Under Alternative 1, current grazing acitvity would stabilize the scenic and hunting values in the EIS area. Alternative 2 would increase sightseeing values in the long-term as range conditions improve. In addition, hunting opportunities would increase as new forage and cover became available for wildlife species. Adverse impacts would be low and consist of scenic degradation near developed range improvement facilities. Alternative 3 would also improve recreation opportunities such as sightseeing and hunting but at a more rapid rate. Range improvements would have low adverse impacts to localized areas of construction. Alternative 4 would benefit sightseeing and hunting by restoring natural vegetation and eliminating erosion into streams. However, protective boundary fences would have low adverse impacts to scenic values.

WILDERNESS

The IMP provided the guidance and direction in evaluating grazing management impacts to wilderness values of lands under wilderness review. Professional judgment by field personnel was the primary analysis technique used to project grazing activity impacts.

Alternative 1 - No Action

The No Action alternative would maintain livestock forage allocation at 21,010 AUMs. New AMPs, new range improvements and resource project developments are not proposed under this alternative. Existing facilities, however, would be maintained.

The current rate of livestock consumption which is slight in excess of the EIS area's carrying capacity would have negligible adverse impacts to wilderness values in lands under wilderness review. The physical and ecological condition of the range would remain generally stable except in old burn areas where some ecological improvement is occurring.

Additional impacts to 2(c) wilderness values are documented under specific resource components. Current levels of consumption under this alternative are grandfathered in lands under wilderness review.

Alternative 2 - Proposed Action

This alternative as well as Alternative 3, contains range management activities and improvements which consist of changes in grazing uses, various water developments, fence removal and installation, and vegetative manipulation. The lack of specific activity locations as well as the lack of information regarding types of ranges improvement facilities requires further analysis on a more site-specific

basis during the Environmental Assessment (EA) process prior to management implementation. However, a brief overview of these activities and associated IMP implications will be discussed. Table 3-8 presents grazing activities by alternative and wilderness inventory unit.

All AUM allocations except the Wells Meadow Allotment (6051) are within carrying capacity. This allotment contains Wilderness Inventory Unit CA-010-068 and is grandfathered under the proposed AUM allocation. Forage allocations in excess of carrying capacity have been recommended to hedge the large growth of bitterbrush throughout the area in order to sustain browse for native deer. The negative impacts of this recommendation to the range will be negligible with potentially positive impacts to native deer species.

Implementing rest-rotation management in Wilderness Inventory Units CA-010-068, CA-010-075 and CA-010-088 would have a short-term low adverse, visual impact to scenic values in these areas. In the long-term, improved range conditions would benefit scenic and natural values by restoring plant vigor and productivity.

Alternative 2 requires the construction of water developments such as springs, wells, pipelines and water troughs. The construction of these facilities would have a low adverse impact to wilderness values in lands under wilderness review. Cross country travel and use of existing vehicle access routes or ways would be allowed for maintenance of range improvements. The occasional use of motorized vehicles would have a potentially low adverse impact. Construction of temporary access routes may be approved if they meet the non-impairment criteria. In the long-term, wilderness values would be enhanced through improvement of range conditions. However, any need to maintain these developments by motorized vehicle could potentially have a high adverse impact on the wilderness values of lands under wilderness review.

Alternative 2 provides for fencing throughout the EIS area. In the short-term, new fences would create very low adverse visual impacts. In the long-term, fencing will primarily allocate cattle distribution and forage more effectively to a carrying capacity level within the allotments, thus enhancing the natural condition of the ranges. Fences will also be used for safety and administrative purposes.

Implementing vegetative burning and chemical spraying would have a high adverse impact to the wilderness values of lands under wilderness review. Initially, a substantially noticeable visual contrast would result and would remain into the long-term period until such time when the vegetation would re-establish itself.

Aerial seeding would have positive impacts to wilderness values by restoring the indigenous Indian ricegrass species to lands under wilderness review devoid of this grass. Additional forage and cover would also benefit native wildlife species.

Prescribed burning and/or chemical spraying has been recommended for allotments in Wilderness Inventory Units CA-010-057, CA-010-058, CA-010-059, CA-010-064, and CA010-090. These treatments would have a high adverse impact to wilderness values and would violate the provisions of the IMP. However, a portion of the proposed spray area in CA-010-090 is grandfathered and applying the same treatment on the portion previously treated is allowable under IMP.

TABLE 3—8
RANGE IMPROVEMENTS, PROJECTS AND GRAZING ADJUSTMENTS BY ALTERNATIVE
FOR LANDS UNDER WILDERNESS REVIEW

Areas Under Wilderness Review[1]	Allotments[2]	Alternative 1 No Action	Alternative 2 Proposed Action[3]	Alternative 3 Stocking by Condition Class	Alternative 4 No Grazing
CA-010-055	Unalloted	None	None	None	None
CA-010-057	Unalloted	None	None	None	None
CA-010-057	Independence Alabama Hills	Existing Situation	Install five water troughs Install ½ mile pipeline Prescribe burn approx-3500 acres Decrease 118 AUMS (-7%)	Install five water troughs Install ½ mile pipeline Prescribe burn approx-3500 acres Decrease 710 AUMs (-44%) Install 10.5 miles of protective boundary fences	Install 10.5 miles of protective boundary fences remove existing range improvement 100% AUM decrease
CA-010-058	Alabama Hills	Existing situation	Prescribe burn 1500 acres Decrease 104 AUMs (-9%)	Prescribe burn 1500 acres Install seven miles of protective boundary fences Decrease 534 AUMS (-45%)	Install approximately seven miles of protective boundary fences Remove existing range improvements 100% AUM decrease
CA-010-059	Independence Sawmill Red Mountain	Existing Situation	Install one water trough Prescribe burn 2500 acres Remove three miles of fence Decrease 69 AUMs, (-9%)	Install one water trough Prescribe burn 2500 acres Remove three miles of fence Install 10 miles of protective boundary fence Decrease 340 AUMs (-45%)	Install 10 miles of protective boundary fence Remove existing range improvements 100% AUM decrease
CA-010-060	West Santa Rita Black Mine Tinemaha Aberdeen	Existing Situation	Install two miles of fence Decrease 89 AUMs (-17%)	Install two miles of fence Decrease 192 AUMs (-37%)	Remove existing range improvements 100% AUM decrease
CA-010-062	West Crater Mountain East Crater Mountain	Existing Situation	Install two miles pipeline Install three water troughs Increase 92 AUMs (25%)	Install two miles pipeline Install three water troughs Install three miles of protective boundary fence Increase 108 AUMs, (29%)	Install three miles of protective boundary fence Remove existing range improvements 100% AUM decrease
CA-010-063	Bishop Unalloted Shannon Canyon/Baker Creek	Existing Situation	Decrease 344 AUMs (-69%)	Decrease 405 AUMs (-81%) Install 3.5 miles of protective boundary fence	Install 3.5 miles of boundary fences 100% AUM decrease

TABLE 3—8 Cont'd.

CA-010-004	Independence	Existing Situation	Install three water troughs Prescribe burn 4500 acres Install 3.5 miles of fence Decrease 14 AUMs (-3%)	Install three water troughs Prescribe burn 4500 acres Install 3.5 miles of fence and four miles of protective boundary fence Decrease 176 AUMs (-42%)	Install four miles of protective boundary fence 100% AUM decrease
CA-010-065	Owens Valley Common Owens Valley Poleta Zurich Laws	Existing Situation	Install one mile of fence Decrease 154 AUMs (-21%)	Install one mile of fence Decrease 176 AUMS (-24%)	Remove existing range improvements 100% AUM decrease
CA-010-068	Wells Meadow Sherwin	Existing Situation	Install ½ mile of pipeline Install one ½ miles of fence Install two water troughs Increase 49 AUMs (25%)	Install ½ mile pipeline Install one ½ miles of fence Install two water troughs Decrease 48 AUMS (-24%)	Remove existing range improvements 100% AUM decrease
CA-010-069	Bishop Unalloted Zurich	Existing Situation	Install two miles of fence Decrease 322 AUMs (-45%)	Install two miles of fence Decrease 322 AUMS (-45%)	100% AUM decrease
CA-010-070	Little Round Valley	Existing Situation	Decrease two AUMs (-4%)	Decrease 19 AUMs (-42%)	100% AUM Decrease
CA-010-072	Tobacco Flat	Existing Situation	Install one water trough Decrease eight AUMs (-20%)	Install one water trough Decrease 20 AUMS (-50%)	Remove existing range improvements 100% AUM decrease
CA-010-075	Bramlette Marble Creek Lone Tree Jeffrey Laws Chalfant Valley	Existing Situation	Install five water troughs Install nine miles of fence Aerial seed 7700 acres Decrease 469 AUMs (-18%)	Install five water troughs Install nine miles of fence Aerial seed 7700 acres Decrease 1311 AUMs (-51%)	Remove existing range improvements 100% AUM decrease
CA-010-077	Bramlette Hammil Valley	Existing Situation	Decrease 280 AUMs (-9%)	Install two miles of protective boundary fence Decrease 1360 AUMs (-46%)	Install two miles of protective boundary fence Remove existing range improvements 100% AUM decrease
CA-010-079	Hammil Valley Volcanic Tablelands	Existing Situation	Remove 2½ miles of pipeline and relocate water troughs Install six miles of fence Install three water troughs Decrease 3110 AUMs (-49%)	Remove 2½ miles of pipeline and relocate water troughs Install six miles of fence Install three water troughs Decrease 4427 AUMS (-69%)	Remove existing range improvements 100% AUM decrease
CA-010-080	Chalk Bluff Volcanic Tablelands	Existing Situation	Install four miles of fence Decrease 3262 AUMs (-65%)	Install four miles of fence Decrease 3976 AUMs (-79%)	100 AUM decrease

TABLE 3—8 Cont'd.

CA-010-081	Chalk Bluff Volcanic Tablelands	Existing Situation	Install three water troughs Install eight miles of fence Decrease 3262 AUMs (-65%)	Install three water troughs Install eight miles of fence Decrease 3976 AUMs (-79%)	100% AUM decrease
CA-010-082	Volcanic Tablelands	Existing Situation	Decrease 3124 AUMs (-70%)	Decrease 3656 AUMs (-82%)	100% AUM decrease
CA-010-083	Volcanic Tablelands	Existing Situation	Decrease 3124 AUMs (-70%)	Decrease 3656 AUMs (-82%)	100% AUM decrease
CA-010-084	Volcanic Tablelands	Existing Situation	Decrease 3124 AUMs (-70%)	Decrease 3656 AUMs (-82%)	100% AUM decrease
CA-010-087	Black Lake Unalloted	Existing Situation	Install one water trough Install three miles of protective boundary fence Increase 223 AUMs (223%)	Install one water trough Install three miles of protective boundary fence Increase 134 AUMs (134%)	100% AUM decrease
CA-010-088	Granite Mountain Adobe Lake Adobe Valley	Existing Situation	Remove three miles of fence; relocate one mile Install 16.5 miles of protective boundary fence Aerial seed 4400 acres Increase 372 AUMs (13%)	Remove three miles of fence; relocate one mile Install 16.5 miles of protective boundary fence Aerial seed 4400 acres Decrease 278 AUMs (-10%)	Install 14.5 miles of protective boundary fence Remove existing range improvements 100% AUM decrease
CA-010-090	Granite Mountain Mono Mills Dorn	Existing Situation	Chemically spray 4000 acres Prescribe burn 6400 acres Install two miles of pipeline Install eight water troughs Install 10.5 miles of fence Increase 1659 AUMs (64%)	Chemically spray 4000 acres Prescribe burn 6400 acres Install two miles of pipeline Install eight water troughs Install 10.5 miles of fence Increase 339 AUMs (13%)	Install one mile of protective boundary fence Remove existing range improvements 100% AUM decrease
CA-010-091B	Unalloted	None	None	None	None
CA-010-055	Unalloted	None	None	None	None
CA-010-056	Unalloted	None	None	None	None
CA-010-057	Independence Alabama Hills	Existing Situation	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 118 AUMs (-7%)	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 710 AUMs (-44%) Install 10.5 miles of protective boundary fences	Install 10.5 miles of protective boundary fences Remove existing range improvements 100% AUM decrease

TABLE 3—8 Cont'd.

CA-010-058	Alabama Hills	Existing Situation	Prescribe burn 1500 acres Decrease 104 AUMs (-9%)	Prescribe burn 1500 acres Install seven miles of protective boundary fences Decrease 534 AUMs (-45%)	Install approximately seven miles of protective boundary fences
CA-010-055	Unalloted	None	None	None	None
CA-010-056	Unalloted	None	None	None	None
CA-010-057	Independence Alabama Hills	Existing Situation	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 118 AUMs (-7%)	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 710 AUMs (-44%) Install 10.5 miles of protective boundary fences	Install 10.5 miles of protective boundary fences Remove existing range improvements 100% AUM decrease
CA-010-058	Alabama Hills	Existing Situation	Prescribe burn 1500 acres Decrease 104 AUMs (-9%)	Prescribe burn 1500 acres Install seven miles of protective boundary fences Decrease 534 AUMs (-45%)	Install approximately seven miles of protective boundary fences Remove existing range improvements 100% of AUM changes
CA-010-055	Unalloted	None	None	None	None
CA-010-056	Unalloted	None	None	None	None
CA-010-057	Independence	Existing Situation	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 118 AUMs (-7%)	Install five water troughs Install ½ mile pipeline Prescribe burn approximately 3500 acres Decrease 710 AUMs (-44%) Install 10.5 miles of protective boundary fences	Install 10.5 miles of protective boundary fences Remove existing range improvements 100% AUM decrease
CA-010-058	Alabma Hills	Existing Situation	Prescribe burn 1500 acres Decrease 104 AUMs (-9%)	Prescribe burn 1500 acres Install seven miles of protective boundary fences Decrease 534 AUMs (-45%)	Install approximately seven miles of protective boundary fences 100% AUM decrease

1/ Includes Wilderness Study Areas and Contested Areas

2/ Identified Allotments are allotments as recommended in the Proposed Action Alternative.

3/ AUM changes reflect changes in the entire allotment(s) of which areas under wilderness review are a part of. AUM changes are relative to the No action Alternative.

Aerial seeding has been recommended in Wilderness Inventory Units CA-010-075 and CA-010-088. This treatment will beneficially impact wilderness values by restoring natural vegetation to the area. The area will be seeded with Indian ricdgrass and will improve forage and cover for native wildlife.

Alternative 3 - Stocking by Condition Class

Stocking allotments by vegetative condition would positively benefit the wilderness values of lands under wilderness review by accelerating improvements of range conditions through a decrease of allocated AUMs. Protective boundary fences will benefit range resource values by curtailing excessive livestock use of public lands. Otherwise, projected range improvements and grazing systems and their impacts will remain the same as in the Proposed Action.

Alternative 4 - No Grazing

The elimination of grazing activities would generally benefit wilderness values. The removal of existing facilities and subsequent rehabilitation would reestablish vegetation at these sites, thus enhancing the natural values of the area. The construction of protective boundary fences would have a low adverse visual impact on wilderness values. Additional impacts to Section 2(c) wilderness values are documented under specific resource component.

Conclusions:

The No Action alternative would negligibly impact wilderness values by maintaining current grazing levels in lands under wilderness review. AUM allocations under this alternative are currently grandfathered. The Proposed Action and Stocking by Condition Class alternatives would generally benefit wilderness values in the long-term by improving the natural condition of the range. However, the proposed vegetative treatments in non-grandfathered areas would have high adverse impacts in the respective Wilderness Inventory Units, and thus violate the standards of IMP. The No Grazing alternative would generally benefit wilderness values by improving the natural condition of the range.

SOCIAL AND ECONOMIC CONDITIONS

Assumptions:

Analysis of proposed grazing management in relation to socioeconomic factors was based partially upon the following assumptions:

1. AUM reduction in multiple operator allotments would be disturbed in the same proportions as existing allocation of forage. (e.g. all operators receive the same percentage reduction in the affected allotment).

2. Livestock market conditions will remain constant. The socio-economic impacts to livestock operators are presented in Table 3-9 and in the following discussion.

TABLE 3—9
SOCIOECONOMIC IMPACTS TO LIVESTOCK OPERATORS

Socioeconomic Impact Item	No Action	Proposed Action	Condition Class	No Grazing
Total livestock AUMs	21,010 AUM	18,462 AUM	11,894 AUM	0 AUM
Percent change from existing conditions	0%	-14%	-44%	-100%
Number of operators substantially affected	N/A	2 Operators	5 Operators	12 Operators
Percent of BLM livestock forage allocation by operator category:	56	60%	60%	N/A
Cattle Operators	56%	60%	60%	N/A
Part-time	(4%)	(4%)	(4%)	N/A
Small	(9%)	(9%)	(9%)	N/A
Medium	(24%)	(26%)	(27%)	N/A
Large	(18%)	(21%)	(20%)	N/A
Sheep Operators	11%	6%	5%	N/A
Combination Operators	32%	32%	33%	N/A
New Allotments - New Operators	N/A	2%	2%	N/A
Total projected livestock AUMs (Year 2005)	0 AUM	26,617 AUM	23,852 AUM	20,109 AUM
Percent change from existing conditions	100%	+27%	+9%	-4%
Number of operators substantially affected	12	0	0	0

Alternative 1 - No Action

Under the No Action alternative socioeconomic conditions would continue as described in the Affected Environment Chapter. Overall livestock forage allocations would total 21,010 AUMs and 26 livestock operators would be permitted to use this forage.

Livestock use would continue similar to the current situation. Normal movements of stock between BLM, U. S. Forest Service, and DWP lands would continue. Cooperative management with the Inyo National Forest would continue on ten allotments. Administrative problems due to inaccurate determinations of percent federal range on five allotments and unauthorized use on two allotments (0002 and 0004) would need to be addressed through other actions, such as trespass actions or fencing of the public lands.

The projected decine in livestock AUMs by the year 2005 (Table 3-9) would result in a decline of about $26,000 in the regional sales of cattle, sheep and wool (1979 dollars). This loss would be insignificant to the regional economy and since it would develop gradually it would be unlikely to impact any operator substantially.

Alternative 2 - Proposed Action

The reduction of livestock forage allocations from 21,010 to 18,462 AUMs would have no noticeable affects on the economy or population level of the Inyo-Mono Region nor would the increase to 23,852 AUMs by the year 2005.

Livestock Industry

The livestock industry initially would be deprived of about $80,000 in annual sales at 1979 prices of meat and wool produced by the grazing of BLM lands in the EIS area. The reduction in cattle sales would be $16,000 and the reduction in sheep and wool sales would be $64,000. This would not be noticeable in the industry in the Region. By the year 2005, increases in productivity as a result of the Proposed Action would add about $60,000 in annual sales of meat and wool. The increase in cattle sales would be $12,000 and the increase in sheep and wool sale would be $48,000. These increases would not be noticeable regionally.

Livestock Management

Cooperative management of ten allotments would continue with the Inyo National Forest. Normal movements of stock between public land, DWP and Forest Service lands would continue. Most allotments which are adjacent to or intermingled with Forest Service and DWP administered lands would not require fencing because the stocking rates and seasons of use are generally compatible. One allotment (6024) would be grazed during a season which is different from the adjacent Forest Service season of use. Some unauthorized use would probably occur on this allotment.

Livestock Operators

The impact of the initial AUM reductions proposed under this alternative would be substantial for two individual operators. These negative impacts are discussed in the following three sections. The long-term benefits from increases in forage production (Table 3-9) would occur gradually and would probably not be substantial to any individual operator.

In addition to the impacts described below, four of the new allotments created by this alternative would probably be assigned to additional operators. Since these allotments would total only 327 AUMs there would not be substantial effects to the Regional economy or the operators themselves.

(1) Cattle Operators

Cattle operators would initially be authorized 12 percent less AUMs under the Proposed Action than under existing conditions. Applying this percent reduction to the representative cattle operator budget would result in changes in net ranch income and return above cash costs. Table 3-10 shows the amount of return to this hypothetical operation under three possible responses.

TABLE 3-10

PROFITABILITY OF REPRESENTATIVE 300 HEAD CATTLE OPERATION - PROPOSED ACTION

Operator Response	Return above cash Costs	Net Ranch Income*
Purchase hay @$60/ton	$26,452	$4,799
Reduce herd size by 11 head	$27,018	$5,360
Rent private pasture @$10/AUM	$27,097	$5,440
Existing Conditions	$28,194	$6,536

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

One of the Part-time operators could be substantially impacted by the initial reductions under this alternative due to a high seasonal dependency on BLM forage. However, this operator has not maintained a herd of cattle to use BLM forage every year, so the changes in BLM forage management would probably not be the limiting factor. Elimination of spring grazing could result in an operating capacity reduction of over one-half. The three operators in this category would have their BLM forage allocation reduced by 26 percent.

Initial reduction under the Proposed Action would substantially impact one of the five Small cattle operators. This impact stems primarily from the changes in season of use; the loss of AUMs would be only moderate. This operator could lose all of his spring grazing and for a period of approximately six weeks would have no forage for his livestock. The cost of high protein forage for replacement feed would be at least $3,500. The other Small operator would not be substantially impacted. This group as a whole would have its BLM forage allocation reduced by 18 percent.

None of the seven Medium size cattle operators would be substantially affected by the initial reductions under this alternative. In total, BLM forage allocations to them would be reduced by 9 percent. One operator would lose spring forage supplied by BLM allotments. This would cause greater grazing pressure on his private grazing lands or result in a reduction in herd size.

None of the Large cattle operators would be substantially affected. They would, as a group, receive an AUM reduction of two percent. Two of the operators would receive forage increases.

(2) Sheep Operators

A 53 percent reduction in BLM forage use by the sheep operators would occur under the Proposed Action. Impacts to a hypothetical representative sheep operation budget have been estimated. Changes to return above cash costs and net ranch cost and net ranch income are apparent in Table 3-11.

TABLE 3-11

PROFITABILITY OF REPRESENTATIVE SHEEP OPERATION - PROPOSED ACTION

Operator Response	Return Above Cash Costs	Net Ranch Income*
Reduce herd by 199 ewes	$127,691	$58,284
Rent private pasture @$10/AUM	$137,114	$67,707
Existing conditions (4920 ewes)	$141,169	$71,762

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

None of the five sheep operators would be substantially impacted by the Proposed Action.

(3) Combination Operators

Niether of these operators would be substantially affected by the Proposed Action. Their BLM forage allocation in the EIS area would be reduced an average of 15 percent initially.

Alternative 3 - Stocking by Condition Class

The reduction of livestock forage allocations from 21,010 to 11,894 AUMs would have no noticeable affect on the economy or population level of the Inyo-Mono Region nor would the increase to 26,617 by the year 2005.

Livestock Industry

The livestock industry initially would be deprived of about $200,000 in annual sales of meat and wood produced by the grazing of BLM lands in the EIS area at 1979 prices. The reduction in cattle sales would be $66,000 and the reduction in

sheep and wool sales would be $133,000. This would not be noticeable to the industry in the Region. By the year 2005, increases in productivity would add about $125,000 in annual sales of meat and wool. The increase in cattle sales would be $41,000 and the increase in sheep and wool sales would be $84,000. These increases would not be noticeable regionally.

Livestock Management

Nineteen allotments which are adjacent to or intermingled with grazed areas would need to be fenced in order to implement this alternative. Approximately 150 miles of fence would be required. Fencing along the BLM boundary would eliminate livestock access to water developments located on DWP, private, or Forest Service lands on eleven allotments. Fifteen to 20 additional water developments would be required on these allotments. Normal stock movements among the jointly managed lands within the allotments would be disrupted by the fences. Two allotments (6037 and 6022) to be fenced would be divided into two unconnected parcels each.

Cooperative management with Inyo National Forest would be terminated on at least four allotments due to incompatible stocking rates. Livestock movement on eight Forest Service allotments would be disrupted due to the presence of fences along boundaries which would eliminate livestock access to water developments located on public lands. Stocking rates on four Forest Service allotments would need to be adjusted due to the impracticality of licensing the allotments separately from adjacent BLM allotments.

Livestock Operators

The impact of the initial AUM reductions proposed under this alternative would be substantial on five individual operators. These negative impacts are discussed in the three following sections. The long-term benefits from increases in forage production (Table 3-9) would occur gradually and would not be substantial to any operators.

(1) Cattle Operators

On the average, cattle operators would initially be authorized 34 percent fewer AUMs than under existing conditions. Applying this percent reduction to the representative cattle operator budget would result in changes in net ranch income and return above cash costs. Table 3-12 shows the amount of return to a hypothetical operator under three possible responses.

TABLE 3-12

PROFITABILITY OF REPRESENTATIVE 300 HEAD CATTLE OPERATION - STOCKING BY CONDITION CLASS

Operator Response	Return Above Cash Costs	Net Ranch Income*
Purchase hay @$60/ton	$21,054	$ 604
Reduce herd size by 44 head	$23,506	$1,848
Rent private pasture @$10/AUM	$23,698	$2,040
Existing conditions	$28,194	$6,536

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

One of the part-time cattle operators would be substantially impactd by this alternative due to a high seasonal dependency on BLM forage. The elimination of spring grazing on this operator's allotment would probably result in an operating capacity reduction of over one-half. However, this operator has not been keeping a herd of cattle every year so the changes in BLM forage management would not be the limiting factor for this operator. For the three operators in this category, licensed livestock use would be reduced by 56 percent initially.

Stocking by Condition Class would substantially impact one of the five Small cattle operators. This operator could lose all of his spring grazing due to a change in season of use on his allotments. For a period of approximately six weeks this operator would have no forage source. High protein forage is necessary at that season and would cost at least $3,500. The other Small operators would not be substantially impacted. The group as a whole would have its AUM allocation reduced by 49 percent initially.

The seven Medium cattle operators would have their AUM allocation reduced by 38 percent initially. Two of them would be substantially impacted. Neither of these operators has a high seasonal dependency on BLM forage but they would each lose about ten percent of their annual forage supply in this alternative. Also, one of these operators would lose use of one allotment during the spring when forage is most critical.

None of the three Large operators would be substantially impacted. BLM AUMs allocated to these operators would be initially reduced by 39 percent. Some "non-use" has been taken by these operators in recent years.

(2) Sheep Operators

Sheep operators would have AUM allocations reduced by 71 percent initially. Impacts to a hypothetical representative sheep operation budget have been estimated. Changes to return above cash costs and net ranch income are apparent in Table 3-13.

TABLE 3-13

PROFITABILITY OF REPRESENTATIVE SHEEP OPERATION - STOCKING BY CONDITION CLASS

Operator Response	Return Above Cash Costs	Net Ranch Income*
Reduce herd by 266 ewes	$123,983	$54,576
Rent private pasture @$10/AUM	$134,779	$71,762

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

(3) Combination Operator

Neither of the Combination operators would be substantially impacted. These operators would have their total allocation reduced by 43 percent during the implementation period.

In addition to the impacts described above, four of the new allotments created by this alternative would probably be assigned to additional operators. Since these allotments would only total 198 AUMs there would not be substantial impacts to the regional economy or the operators themselves.

Alternative 4 - No Grazing

The elimination of 21,010 AUMs of livestock grazing would have no noticeable affect on the economy or population level of the Inyo-Mono Region. This is due to the fact that agriculture, including grazing, provides four percent of the Region's personal income, and a lesser proportion of its employment. With BLM providing less than five percent of the forage required by the Region's livestock, cancellation of grazing would have less effect on the economy than the normal year-to-year variation in tourist trade. There would however, be significant impacts to some livestock operators.

Just as regional impacts from the cancellation of livestock grazing would not be noticeable in the economy, neither would any accompanying changes in spending by visitors to BLM lands (see the Recreation analysis).

These changes in visitor spending, though impossible to estimate with any precision, would be less than the normal year-to-year variation brought on by differences in skiing conditions, and gasoline costs in this tourist oriented region.

Under this alternative, as well as all of the others, the economy of the Inyo-Mono Region would continue to be dominated by recreation and tourist spending with most visitors going to Mammoth, June Lake, and Yosemite National Park, all outside the EIS area.

People who object to sheep grazing in the vicinity of urban areas would be gratified by the absence of sheep on the public lands. However, since use of the sheep driveway would still be permitted, some use of public lands by sheep would continue.

Livestock Industry

The livestock industry would be deprived of about $410,000 in annual sales of meat and wool produced by the grazing of the BLM lands in the EIS area at 1979 prices. The reduction in cattle sales would be $170,000 and would accrue almost entirely to operators living in the Inyo-Mono Region. This would be less than three percent of the Region's livestock sales. The reduction in sheep and wool sales would be $240,000 and would accrue to operators located in the San Joaquin Valley, outside the Region. The resulting reduction in number of sheep headquartered in Kern County would be approximately two percent.

Livestock Management

Allotments which are adjacent to or intermingled with grazed areas would need to be fenced under this alternative. At least 200 miles of fence would need to be constructed under this alternative. Fencing would disrupt grazing management on

eight Forest Service allotments which utilize water facilities on public lands. Grazing permits would probably be terminated on four small Forest Service allotments which are licensed in conjunction with larger BLM allotments. Fencing small public land parcels within larger DWP leased areas would interrupt normal stock movements resulting in more concentrated patterns of use on the DWP lands and probable weight losses for the stock.

Livestock Operators

(1) Cattle Operators

Cancellation of all BLM livestock grazing privileges would eliminate 11,966 AUMs of grazing by 18 cattle operators. The effect to the representative ranch budget (see Appendix F) would be a decrease in net revenue. Table 3-14 shows the amount of net ranch income and return above cash costs which would result under three possible responses to this alternative.

TABLE 3-14

PROFITABILITY OF REPRESENTATIVE 300 HEAD CATTLE OPERATION - NO GRAZING

Operator Response	Return Above Cash Costs	Net Ranch Income*
Purchase hay @$60/ton	$10,779	$2,887
Reduce herd size by 107 head	$15,000	$1,334
Rent Private Pasture @$10/AUM	$17,229	$3,563
Existing conditions	$28,194	$6,536

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

This hypothetical operation is 36 percent dependent upon BLM forage for its annual forage supply. All of these responses except hay purchase would permit the ranch to pay all of its cash costs including interest. However, the net ranch income would be reduced by at least 45 percent. In addition to the above, usability of intermingled private lands could be reduced if grazing on the public lands were prohibited. It is assumed that much of the public lands would be fenced to prevent livestock from wandering on to them.

One of the three Part-time cattle operators would be substantially impacted by loss of grazing on BLM land due to a high seasonal dependency. The other two part-time operators would not be substantially affected.

Three of the five Small cattle operators would be substantially affected. One of these operators would probably have to give up his cattle operation as presently constituted due to a high seasonal dependence on BLM forage.

Four of the seven Medium size cattle operators would be substantially affected by the loss of BLM forage. For one of these operators, with an annual forage dependency on BLM of over twenty percent, the loss of net ranch income would probably be in the same proportion as shown for the representative cattle operation, above. The others would be less severely impacted.

Of the three Large operators, one would be substantially affected. This operator would probably have to make a herd reduction of at least 25 percent to accommodate the reduction in spring forage supplied by BLM allotments. This operator's other supply of spring forage is on BLM allotments in the California Desert Conservation Area. If both sources of spring forage were interrupted, this operation would have to be sold or reduced to a scale compatible with spring forage production available from its private lands.

In addition to the above, usability of intermingled private lands could be reduced if grazing on the public lands were prohibited. It is assumed that much of the public lands would be fenced to prevent livestock from wandering on to them.

(2) Sheep Operators

Cancellation of BLM livestock grazing privileges would eliminate 2,239 AUMs of grazing by five sheep operators. An example of how loss of the use of BLM forage in the EIS area would affect sheep operators is indicated by use of the representative sheep operation budget in Appendix G. An estimate of loss of income is shown in the following Table 3-15 under two alternative courses of action for the operator (hay feeding for sheep in the summer is not considered a reasonable alternative):

TABLE 3-15

PROFITABILITY OF REPRESENTATIVE SHEEP OPERATION - NO GRAZING

Operator Response	Return Above Cash Costs	Net Ranch Income*
Reduce herd by 295 ewes	$122,148	$54,741
Rent private pastures @$10/AUM	$133,519	$64,112
Existing conditions (4920 ewes)	$141,169	$71,762

*Return above cash costs minus family labor, depreciation, and interest on investment other than land.

This hypothetical sheep operation obtains six percent of its forage supply from BLM in the Benton-Owens Valley. The net ranch income does not include income spent on mortage payments.

One of the five sheep operators would be substantially affected by the loss of the BLM forage in the EIS area as a result of a high dependency during the summer season. Most of these operator's allotments are intermingled with a larger

quantity of private lands which are also used by their bands of sheep. Closure of the public lands to grazing would mean poor access by sheep to some of the private lands. The result would be a loss of more than the 2,239 AUMs of cancelled use to the sheep operators. In addition, these operators also use allotments in the California Desert Conservatin Area. If both forage sources were lost, the total affect would be much more severe.

(3) Combination Operators

The two Combination operators have both cattle and sheep allotments, but are primarily sheep operators in the EIS area. They have more sheep than do the pure sheep operators but the analysis of income changes for the representative sheep operator budget is valid for proportionate changes. They would lose the use of 6,805 AUMs of the BLM forage under the No Grazing alternative. The smaller of the two Combination operators would be substantially affected by the loss of BLM forage. This operator would probably reduce the size of his operation in the EIS area but would be able to continue ranching on private lands.

Conclusions:

Since BLM forage generates less than one-fifth of one percent of the region's personal income, the economic impact of changes in AUMs under the four alternatives would not be significant on the regional economy either during the implementation phase, when the impact would be negative, or in the long-term (2005) when the impact would be positive. Changes in regional livestock and wool sales under the four alternatives would range from an annual drop of $410,000 under the No Grazing alternative to an increase of $125,000 by the year 2005 under the Stocking by Condition Class alternative.

Changes in visitor spending would also be insignificant under each alternative. The regional population would not be affected.

There would, however, be significant impacts to some livestock operators. Under the Proposed Action, Stocking by Condition Class and No Grazing alternatives, 2, 5, and 12 operators would be substantially affected, respectively.

MITIGATING MEASURES

The measures proposed in Table 3-16 would reduce or eliminate certain adverse impacts identified in Chapter 3. All measures are technologically feasible and will be required if either the Proposed Action or Stocking by Condition Class alternative is approved.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are those which would not be mitigated. Such impacts are often referred to as "residual" impacts. Generally they are unavoidable due to a direct conflict with other resource values and/or would be prohibitively costly to mitigate.

TABLE 3—16

MITIGATING MEASURES

Adverse Impact	Mitigation	Results
	VEGETATION	
Potential impacts to four of the nine FWS candidate threatened or endangered species: eriogonum ampullaceum, Astragalus johannis howellii, centaurium namophyllum, and Astragalus lentigenosus var. piscinensis.	BLM will determine the current impacts and will establish and continue monitoring of these species. Grazing adjustments will be made to enhance their conservation and protected their essential habitat.	Enhancement of essential habitat and preservation of the four candidate species.
	WILDLIFE	
Competition between livestock and wildlife for food, cover and space.	The Wells Meadow, Sherwin and Round Valley allotments would not be grazed until habitat management plans have been developed for the Sherwin and Buttermilk deer herds. Season-of-use will be 6/01 — 10/15. Stocking levels will be consistent with carrying capacity.	
	A Habitat Management Plan will be developed for the Casa Diablo deer herd. It will develop appropriate seasons of use for the Marble Creek, Bramlette, and Hammil Valley allotments.	
	Retain the present season-of-use, 3/01 - 6/30 on Red Mountain and West Crater Mountain allotments.	
	Reduce the allocation on the Poverty Hills allotment to 100 AUMs with a season-of-use of 12/01 - 03/31 Exclude livestock grazing from critical wildlife areas in Sawmill Creek, Shannon Canyon	These changes would reduce impacts to sage grouse, deer, and other wildlife.
	Establish control areas to monitor grazing impacts on wildlife, e.g. in riparian and aquatic habitat.	Monitoring would allow for adjustments to the grazing program.
Loss of forage and cover within vegetation treatment areas.	Leave a minimum of 15% of vegetation untreated.. Do not spray or burn in large blocks. Spraying will be done in strips and will avoid critical sage grouse habitat.	These mitigations will lessen the impacts of vegetation manipulation.
	Follow the guidelines for land treatment in the BLM Tech Note "Habitat Requirements and Management Recommendations for Sage Grouse."	Maximum protection and advantage would be given to sage grouse, other species would benefit also.
Sheep bedding areas may negatively affect burrowing and ground nesting wildlife.	Designate non-bedding areas for sheep.	Reduction of potential impacts.
Management objectives on deer and elk critical areas may not be met.	Follow the guidelines of the Owens Valley Tule Elk HMP! If grazing as a management tool is unsatisfactory in changing habitat conditions, grazing will cease and mechanical methods used.	Better protection and management of critical areas.
	WATER RESOURCES	
Degradation of water quality from livestock.	Fences to be placed at least 150 feet from waters edge if livestock are to be grazed.	Livestock would not concentrate so much along the water's edge.
	RECREATION	
Fences may prevent or hinder access to certain areas.	Provide and human access points at appropriate sites.	Allows access to recreation sites.

MITIGATING MEASURES CONT'D.

	VRM	
Water developments may negatively affect sightseeing.	Blend developments into the landscape through proper siting, paint color, etc.	Decrease aesthetic impact.
	WILDERNESS	
Violation of IMP guidelines in all or parts of WSAs CA-010-057, CA-010-59, CA-010-64, and CA-010-90 from proposed burns and chemical sprays.	Do not allow prescribed burns or chemical sprays in these units, except that part of CA-010-90 where prescribed burning is a "grandfathered" activity.	Protects potential wilderness values.
	CULTURAL	
Potential impacts on cultural artifacts sites, and other cultural resources.	Livestock exclusion from localized sites. Data recovery and salvage programs will be initiated in coordination with the state Historic Preservation office and, as appropriate, with the Advisory Council on Historic Preservation when exclusion is not possible.	Recovery and/or preservation of cultural values.
	25 monitoring sites will be established in 1982 and 10 new plots each succeeding year. Each plot will be monitored a minimum of five years. The results of these studies will be used to develop protective recommendations for cultural resources.	Establishment of grazing-impacts on cultural resources.
	SOCIAL AND ECONOMIC	
Potential severe impacts to one small size cattle operator as a result of the proposed.	Allow spring use under a deferred-rotation grazing system for the Hammil Valley allotment.	Relieve economic hardship to one operator.

Soils

Unavoidable adverse long-term impacts to approximately 1,000 acres would occur from development and use of water sites. Short-term increases in sediment yield and wind erosion would occur from new fence construction short-term increases in runoff and erosion would occur on 29,000 acres as a result of prescribed burning.

Water

There would be unavoidable adverse impacts to water quality at 1) unprotected springs and streams where water is not piped away; and 2) at springs and streams where troughs are less than ½ mile from the source.

Vegetation

There would be short-term adverse impacts to the vegetation from construction projects and land treatments.

Wildlife

Unfenced spring and riparian habitats accessible to livestock would receive varying degrees of unavoidable impact.

Wildlife would be temporarily disturbed during construction of fences and water facilities. Approximately 34 acres would be permanently disturbed plus an estimated 976 acres immediately adjacent to new water facilities which would be degraded.

Construction of 73 miles of fence in mule deer and tule elk habitat would interfer with normal movement patterns and increase the probability of entanglement and mortality.

Prescribed burns and chemical treatments on 36,360 acres would decrease the value of certain habitats to those species, especially non-game, resident to them.

The loss of 11,899 AUMs (Alternative 3); 18,462 AUMs (Alternative 2); or 21,010 AUMs (Alternative 1) to livestock would result in less forage, cover, and space for wildlife.

There would be low unavoidable impacts to several deer and elk herds resulting from seasons of use centered around spring use.

Alternatives 2 and 3 stipulate an average utilization of 50 percent of key forage species. Pastures would, however, at times experience utilization above and below 50 percent. Utilization exceeding 60 percent within a specific pasture or allotment in the short term would adversely impact wildlife species inhabiting the area. Wildlife and livestock would compete more heavily. Likewise, failure to move livestock by required rotation dates would decrease the vigor of browse and herbaceous species, which might be reflected in poor growth or seed production the following year. This short-term adverse impact would be realized until the grazing system is back on correct pasture movement dates.

Wild Horses

Some changes in movement patterns, but no changes in wild horse population number, would remain.

Cultural Resources

Cultural resources not discovered during project-specific environmental analysis could be damaged or destroyed. As long as livestock grazing of the public lands continues, impacts to cultural resources will continue to accrue. Initiation of data recovery and salvage programs will result in an unmitigable loss of data for further research consideration. Impacts to non-tangible aspects of Native American Paiute-Shoshone sacred, religious and traditional values may be unmitigable.

Visual Resources

Range facilities would impart an unknown degree of longterm adverse impact on visual resources. Land treatments produce short-term adverse impacts to the visual resource.

Recreation

Fencelines, water developments and associated trampling, land treatments, and other man-caused alterations of the natural environment would unavoidably degrade aesthetic and primitive values.

Wilderness

There would be unavoidable low adverse impacts to visual and aesthetic wilderness values from fencing, water development, and pastures being grazed under rest-rotation management systems. Long-term adverse visual and aesthetic impacts would occur on that portion of WSA-010-90 where spraying is a grandfathered activity.

Social and Economic Conditions

Depending upon the alternative chosen for any given allotment the operator may suffer an unmitigatable economic loss as a result of a reduction in forage or change in season of use. The range of possible impacts is discussed under this section in Chapter 3 analysis.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The term "irreversible" refers to that which is incapable of being reversed. The term "irretrievable" is synonymous with the terms "irrecoverable" or "irreplaceable".

An estimated 34 acres would be occupied by new water developments, losing their capacity to produce vegetation for the life of the development.

There would be a minimal irretrievable loss of soil from vegetation reductions resulting from improvement construction and land treatments.

Cultural resources, fragile and non-renewable, are lost forever when damaged or destroyed. Data recovery and salvage programs, if effected, only partially ameliorate the impacts. Some data is irretrievably lost even while artifacts and some data are salvaged. Damage to cultural resources from the perspective of Paiute-Shoshone values is probably irreversible. The heritage of the entire nation irretrievably suffers at least some degree of loss through damage or destruction of cultural resources.

Construction materials, once installed in a range improvement, would be irretrievably committed.

Costs of project installation and maintenance and labor and administrative expenditures involved in grazing management would be unavailable to other programs.

RELATIONSHIPS BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

This section analyzes the trade-offs between short-term use and long-term productivity of the individual resources affected by grazing management. For this analysis, short-term refers to the 5-year period of implementation (1982-1986) and long-term refers to a period longer than 25 years from the beginning of implementation (after 2007).

The more important tradeoffs include (1) vegetation disturbance from range improvement construction and vegetation treatments on 36,500 acres for improved ecological condition on almost four times that acreage and (2) localized adverse impacts to wilderness values for increase in vegetative diversity. Additional tradeoffs are detailed in Table 3-17.

TABLE 3-17

SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY: TRADE-OFFS

Resource	Short-term	Long-term	Tradeoffs
Soils	Land treatments; prescribed burning and chemical brush control would create minor increases in wind erosion, possibly some water erosion, on 36,360 areas.	Stabilization of soils after vegetation overall lessening of erosion, improved ecological condition class.	Slight short-term increase in wind and water erosion would be traded for long term lessening of erosion.
	Range improvements would locally increase sediment yield and wind erosion, from disturbance of 138 acres.	34 acres of soil would remain disturbed, by compaction, road; the rest would regain surface stability but undergo some disturbance due to cattle congregation on about 980 acres or 16 acres per water development.	Localized increase in sediment yield due to better livestock distribution.
Vegetation	Range improvement construction would disturb 138 acres of vegetation.	After rehabilitation, 34 acres would remain disturbed due to new roads and new facilities. An additional 980 acres would be heavily impacted from livestock concentration around water sources.	Construction of range improvements would aid in better distribution of livestock allowing ecological range conditions to improve at least one condition class on 149 692 acres (28%).
	Spraying would destroy 7360 acres of big sagebrush, burning would destroy 8021 acres of black brush and 9979 acres of mixed desert shrubs. Burning would keep 11,000 acres of sagebrush and bitterbrush habitat in an arrested state of succession	Plant species diversity would increase. Forage production would increase by at least 100%.	36,360 acres of short-term disturbance to vegetation would be exchanged for long-term gains in livestock and big game forage availability.
Water	Disturbance from construction of 61 new water developments, 73 miles of fence, and fencing of reparian areas.	Lessening of livestock pressure on stream banks, some increase in stream stability.	Increase in disturbance from new waters treded for more protected stream banks and increase in bank stability.
Animals and Habitats	Construction of 73 miles of new fence.	Reduced competition between livestock and big game; better control of livestock grazing; increase in forage.	Increased hinderance of big game movement traded for more available wildlife forage.
	Construction of 61 water developments.	Better distribution of livestock, increased distribution of upland game, provision of water to non-game in areas previously lacking water.	Livestock disturbance at water sites traded for increased water availability to upland game and non-game.
	Fencing of water sites and reparian areas.	Productivity of habitat and fauna would increase.	Livestock would lose an insignificant amount of forage to benefit wildlife.
	Prescribed burn 29,000 acres of blackbrush and sagebrush	Increase in wildlife forage, particularly for mule, deer and upland game.	Temporary disruption of local sedentary populations, especially non-game, for long-term benefits to deer and other wildlife.
	Chemical sparying of 7360 acres of sagebrush.	Regression to an earlier vegetation stage, retardation of natural succession to climax.	Benefits to livestock and early successional stages of wildlife to the detriment of wildlife using the existing climax.
	Seeding of 14,702 acres.	Increased forage for upland game and non-game.	No significant trade-offs.
Cultural Resources	Prescribed burning of 29,000 acres. Would create chemical changes, changes in paleoecological associations within the depositional context of sites consumption of or metamorphosis of artifacts from the heat of fire. Fire control and suppression efforts would directly disturb/destroy sites.	The passage of time after treatment would not change original impacts or create new ones.	Depletion of cultural resource data base would outweight short-term gains in knowledge from project clearance inventory.
	Better distribution of livestock would cause an overall reduction of "cumulative" impacts to be reduced by 11% and increased in some allotments.	Continuation of short-term changes from existing situation.	Increased "cumulative" impacts in some allotments offset by decreases overall. No difference between long-term/short-term.
	Fences and water developments initial disturbance negligible due to prework site clearances.	Increased chance of vandalism due to improved access to new waters.	Better distribution of livestock causing overall reduction of cumulative impact traded for increase access to areas around new waters, resultant vandalism.

TABLE 3-17

SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY: TRADE-OFFS

Resource	Short-Term	Long-Term	Tradeoffs
Recreation and Visual Resources	Range improvements would have slight adverse effect on primitive values and sightseeing, especially immediately after installation. A positive impact to hunters would occur, due to increases in water sources for upland game.	Decrease in primitive values, increase in sightseeing values from improved range conditions. Continuation of benefits to hunters.	Loss of primitive values and initial visual disturbance traded for better access, hunting and some increase in quality of scenery.
	Land treatment would initially create adverse visual impacts which would heal within the short-term to provide slightly more diverse scenery, initial adverse impact to upland game, etc.	Increase in vegetative diversity, therefore scenic quality, increase in hunter opportunities because of improved upland game and deer habitat slight increase in scenic diversity due to increased vegetative diversity.	Initial adverse visual impacts traded for increased hunting opportunities and altimate slight increase in scenic values, because of an improved range resource.
Wilderness Values	Range improvements would create local short-term adverse impacts to wilderness values in WSA's.	Long-term productivity of WSA wilderness values would not be impacted.	Short-term localized impacts to wilderness values would be traded for the implementation of grazing practices which would improve the overall ecology of the range resource.
	Land treatment would initially adversely impact wilderness values. but not beyond limits set in the the IMP for WSA's.	The long term impacts to wilderness values would be adverse negligible changes to the natural ecosystem, in all but one case (CA-010-090) increasing vegetative diversity.	The short-term adverse impacts to wilderness values on treated areas within WSA's would be traded for a long term increase in vegetative diversity and no adverse impact to wilderness values.
Social & Economic	The reduction of AUM's by an acreage of 14% and seasonal changes of use would slightly affect the budgets of operators; except for two, who would be substantially impacted, a Part-time cattle operator and a small cattle operator.	The long term impact to individual operators would be favorable but not substantial. Regionally there would be an increase of $80,000 in the annual sale of livestock.	Loses of 14% AUM's area wide, and affects from changes of season of use to operators would be traded for improved range conditions throughout the area of evaluation and an increase of $80,000 in the annual sale of livestock.

Chapter 4

Consultation and Coordination

Chapter 4

Consultation and Coordination

CONSULTATION AND COORDINATION DURING PREPARATION OF THE DRAFT EIS

Prior to and during preparation of the draft EIS, BLM sought information from private, state, and federal agencies; universities, and individuals with expertise or interest relating to grazing management in the EIS area. Records of correspondence are on file at the Bakersfield District Office.

The Bakersfield District issued a public release in March, 1980 summarizing the grazing management alternatives developed at the time. A news release describing the EIS and requesting the attendance of interested parties of the public scoping meeting was issued in April, 1980. On April 23, 1980 a public scoping meeting was held in Bishop, California. Meetings were also held with California Fish and Game and the Los Angeles Department of Water and Power.

CONSULTATION IN THE REVIEW OF THE EIS

In addition to interested individuals, BLM will request comments on the draft EIS from the following agencies and interest groups:

Federal Agencies

Council on Env. Quality (CEQ)
National Adv. Council on Historic Preservation
USDA, Agricultural Research Service at University of Nevada
Soil Conservation Service
U.S. Forest Service - Region 5 Inyo National Forest
Environmental Protection Agency
Bureau of Mines
Heritage Conservation and Recreation Service
Bureau of Reclamation
U.S. Geological Survey
U.S. Fish and Wildlife Service
Bakersfield District, Multiple Use Advisory Board, Grazing Advisory Board
California State Multiple Use Advisory Board

State Agencies

State Clearinghouse
Department of Agriculture
Department of Parks and Recreation
Department of Fish and Game
Department of Water Resources
Air Resources Board
Division of Forestry (Inyo Conservation Center) and Sacramento Office
Native American Heritage Commission
State Historic Preservation
State Lands Commission
Office of Planning and Research
Lahontan Regional Water Quality Control Board

Local Agencies

Inyo County:
- Board of Supervisors
- Recreation Department
- Planning Department

Mono County:
- Board of Supervisors
- Recreation Department
- Planning Department

Owens Valley Inter-agency Committee
Inyo/Mono Agriculture Commissioner
Inyo/Mono Farm Advisor
Inyo-Mono Resource
Los Angeles DWP

APPENDICES

APPENDIX A
LIST OF PREPARERS

Name	EIS Assignment	Position	Education	Professional Experience
Jerry R. Boggs	Team Leader, Wildlife	Wildlife Biologist	B.A. Biology M.A. Biology Ph.D Zoology	7 Years
William Gilmore	Vegetation, Range Use	Range Conservationist	B.S. Range	2 Years
Kenneth Volpe	Vegetation, Range Use	Range Conservationist	B.S. Range Management	4 Years
Dale Bays	Social and Economic Conditions	Economist	Ph.D. Candidate Economics	9 Year
Dan Vaughn	Climate, Soils	Soil Scientist	B.S. Soils and Plant Nutrition	6 Years
Patricia Datzman	Water Resources	Hydrologist	M.S. Watershed Management	3 Years
Garth Portillio	Cultural, Historical	Archaeologist	B.S. Anthropotogy	3 Years
Gerald Magee	VRM' Recreation	Outdoor Rec.	B.S. Environmental Planning and Management	3 Years
Joseph Pollini	Wilderness, VRM, Rec.	Outdoor Rec.	M.S. Forestry	2 Years
Susan Grobman	Editor	Writer/Editor	B. A. English Lit.	5 Years
Holden Brink	State Office Coordinator	Environmental Specialist	Ph.D. Wildlife	10 Years
Joseph Capodice	Wildlife	Wildlife Biologist	B.S. Wildlife Management	5 Years
Charlotte Chamberlain	Botanist	Botanist	B.A. Botany M.A. Phys. Ecology	7 Years

Appendix B

ECOLOGICAL RANGE CONDITION, CARRYING CAPACITY AND FORAGE ALLOCATION METHODOLOGIES

This appendix describes the methods used to identify ecological range conditions, compute carrying capacities, and determine forage allocations on public lands in the Benton/Owens Valley area. The basis for these determinations is the vegetation inventory begun in July 1977 and concluded November 1978. Three hundred and eleven step-toe transects were run to determine percent live perennial vegetative cover and species composition.

Determination of Ecological Range Conditions

Using color aerial photographs and topographic maps, BLM specialists mapped boundaries of contrasting vegetation types in the area. Using the transect data primarily, ecological range sites were described. A soil survey of the area was in progress at the time of the vegetation inventory; however, only preliminary, uncorreclated soils information was available to aid in the ecological site description. Correlation of soils and vegetation is currently proceeding. The correlated data will be available for activity plans and site-specific environmental analyses. Therefore, the primary basis for ecological site differentiation was plant association characteristics. Following the determination of ecological sites, ratings of ecological range condition were assigned based on the percentage of the estimated potential on plant community present on the site. Good condition sites have more than 50 percent of the estimated potential plant community intact; fair condition sites have 25 to 50 percent present; poor condition sites have less than 25 percent present.

Determination of Carrying Capacity

The first step in developing carrying capacities was to derive total percent cover and plant species composition from the transect data. Percent composition was multiplied by appropriate Proper Use Factors (PUF) for each grazing animal. Proper use factors vary according to phenological requirements of the plants, palatability, and the season when grazing occurs. The products of multiplying each species' composition by the appropriate PUF were then added. This sum was multiplied by the average percent vegetative cover to determine the forage acre factor (FAF). The forage acre factor represents the percent of the area that is covered with consumable forage.

The FAF is then multiplied by a suitability facotr. The suitability factor represents the percent of the total acreage which is useable by a particular kind of grazing animal. The product of this multiplication is the net FAF. The net FAF is then divided by the appropriate Forage Acre Requirement (FAR). The FAR is that portion of an acre covered with totally consumable forage which will sustain one cow and calf unit of its equivalent for one month.

The result of this process is the carrying capacity expressed in acres per AUM. By dividing the number of acres within the vegetation type by the acres per AUM, the number of AUMs available to each kind of animal is obtained. The following

equivalent values were used to convert cattle AUM's to other kinds of grazing animal AUMs: 6.3 mule deer per cow-calf unit; 2.0 Tule elk per cow-calf unit; 1 w wild horse per cow-calf unit; and 5.0 domestic sheep per cow-calf unit.

Determination of Forage Allocations

Carrying capacities for Tule elk, mule deer and livestock were computed on areas of known grazing use by applying single-use factors. A single-use factor expresses the degree to which current growth of a plant will be utilized by grazing animals when the range unit on which the plant occurs is properly used by only one kind of animal. On range units which are used by more than one type of grazing animal, the amount of overlap between signle use factors was used to quantify the forage competition occurring.

For example, on the Alabama Hills allotment (6046), dietary overlap occurs between cattle and mule deer on 2,998 acres on three plant species: desert bitterbrush, antelope bitterbrush and mormon tea. The cattle single-use factor for desert bitterbrush during winter/spring is 35 percent; for deer the single-use factor is 40 percent. If stocking occurred at these use levels, approximately 75 percent utilization of current growth would occur on the plant. It was determined the 60 percent utilization should not be exceeded on desert bitterbrush in order to maintain plant vigor; therefore, 15 percent (75 percent minus 60 percent) is the amount of use in conflict. This amount, together with the dietary overlap computed for the other species within the allotment is then applied to the vegetative data to determine the total numbers of AUMs in conflict between mule deer and cattle. Similar computations were performed to quantify the forage conflicts between Tule elk and livestock and mule deer. The number of AUMs in conflict was subtracted from the livestock carrying capacities to determine the initial stocking levels shown in Table 1-1.

Stream _____ Watershed _____ Location TNSP _____ RG _____ Sect. _____
Date _____ Time _____ Air Temp ____°C Water Temp ____°C Flow ____ C.F.S. Avg Depth _____
District/P.U./R.A. _____ Observer(s) _____

Item Rated	Stability Indicators by Classes							
UPPER BANKS	EXCELLENT		GOOD		FAIR		POOR	
Landform Slope	Bank slope gradient <30%	2	Bank slope gradient 30-40%	4	Bank slope gradient 40-60%	6	Bank slope gradient 60%+	8
Mass Wasting Existing or Potentisl	No evidence of past or potential for future mass wasting into channels.	3	Infrequent and/or very small Mostly healed over. Low future potential.	6	Moderate frequency & size, with some raw spots eroded by water during high flows.	9	Frequent or large, causing sediment nearly yearlong or imminent danger of same.	12
Debris Jam Potential Floatable Objects	Essentislly absent from immediate channel area.	2	Present but mostly small twigs and limbs.	4	Present, volume and size are both increasing.	6	Moderate to heavy amounts, predominantly larger sizes.	8
Bank Protection from Vegetation	90% + plant density. Vigor and variety suggests a deep, dense root mass.	3	70-90% density. Fewer plant species or lower vigor suggests a less dense or deep root mass.	6	50-70% density. Lower vigor and still fewer species form a somewhat shallow and discontinuous root mass.	9	<50% density plus fewer species & less vigor indicate poor, discontinuous, and shallow root mass.	12
LOWER BANKS								
Channel Capacity	Ample for present plus some increases. Peak flows contained. W/D ratio<7.	1	Adequate. Overbank flows rare. Width to Depth (W/D) ratio 8-15.	2	Barely contains present peaks. Occasional overbank floods. W/D ratio 15-25.	3	Inadequate. Overbank flows common. W/D ratio 25.	4
Bank Rock Content	65%+ with large, angular boulders 12"+ numerous	2	40-65%, mostly small boulders to cobble 6-12".	4	20-40%, with most in the 3-6"diameter class.	6	<20% rock fragments of gravel sizes, 1-3" or less.	8
Obstructions Flow Deflectors Sediment Traps	Rocks, old logs firmly embedded. Flow pattern of pool & riffles stable without cutting or deposition.	2	Some present, causing erosive cross currents and minor pool filling. Obtions and deflectors newer and less firm.	4	Moderately frequent, moderately unstable obstructions & deflectors move with high water causing bank cutting and filling of pools.	6	Frequent obstructions and deflectors cause bank erosion yearlong. Sed. traps full, channel migration occuring.	8
Cutting	Little or none evident. Infrequent raw banks less than 6" high generally.	4	Some, intermittently at outcurves & constrictions. Raw banks may be up to 12".	8	Significant. Cuts 12-24" high. Root mat overhangs and sloughing evident.	12	Almost continuous cuts, some over 24" high. Failure of overhangs frequent.	16
Deposition	Little or no enlargement of channel or point bars.	4	Some new increases in bar formation, mostly from coarse gravels.	8	Moderate deposition of new gravel & coarse sand on old and some new bars.	12	Extensive deposits of predominately fine particles. Accelerated bar development.	16
BOTTOM								
Rock Angularity	Sharp edges and corners, plane surfaces roughened.	1	Rounded corners & edges, surfaces smooth & flat	2	Corners & edges well rounded in two dimensions.	3	Well rounded in all dimensions, surfaces smooth.	4
Brightness	Surfaces dull, darkened, or stained. Gen. not "bright".	1	Mostly dull but may have up to 35% bright surfaces.	2	Mixture, 50-50% dull and bright, ± 15%; i.e., 35-65%.	3	Predominately bright, 65%+ exposed or scoured surfaces.	4
Consolidation or Particle Packing	Assorted sizes tightly packed and/or overlapping.	2	Moderately packed with some overlapping.	4	Mostly a loose assortment with no apparent overlap.	6	No packing evident. Loose assortment, easily moved.	8
Bottom Size Distribution Percent Stable Material	No change in sizes evident. Stable materials 80-100%	4	Distribution shift slight. Stable materials 50-80%.	8	Moderate change in sizes. Stable materials 20-50%.	12	Marked distribution change. Stable materials 0-20%.	16
Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	6	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	12	30-50% affected. Deposits & scour at obstructions, constrictions, and bends. Some filling of pools.	18	More than 50% of the bottom in a state of flux or change nearly yearlong.	24
Clinging Aquatic Vegetation Moss & Algae	Abundant. Growth largely moss like, dark green, perennial. In swift water too.	1	Common. Algal forms in low velocity & pool areas. Moss here too and swifter waters.	2	Present but spotty, mostly in backwater areas. Seasonal blooms make rocks slick.	3	Perennial types scarce or absent. Yellow-green, short term bloom may be present.	4
	COLUMN TOTALS							

Record the values in each column for a total reach score. (E.___+ G.___+ F.___+ P.___ = ___)

Reach score of: 38 = Excellent, 39-76 = Good, 77-114 = Fair, 115+ = Poor.

Circle only one of the numbers in parenthesis for each indicator rated. If condition falls between the conditions described, cross out the given number and write in the intermediate value. The above Form is to be completed each time Form 6671-2 is completed (see Part II, Recording Field Data). The above Form was developed by Hydrologists in the Northern Region of the United States Forest Service.

Exhibit 3. -- Stream Channel Stability Field Evaluation Form.

1. Survey Level___ 2. Survey Date____ 3. Observer(s)_____ 4. State_____

5. County_____ 6. District_____ 7. Resource Area_____ 8. Survey Unit_____

9. Drainage Unit_____ 10. Reach Ident._____ 11. Survey Unit Drainage Size (Ac.)_____

12. Reach Length Miles: NRL ___ Other Fed.___ State___ Private___ 13. Planning Unit_____ 14. Access____ 15. State Water Qual. Class_____

16. State Fisheries Water Class_____ 17. State Stream Catalog No._____

18. Multiple Use Zone_____ 19. Threatened or End. Wildlife_____ 20. Type of Fishery_____ 21. Sinuosity*___

22. Gradient*_____ 23. Stream Order____ 24. Stream Stage_____ 25. Turbidity*_____

26. Stream Size on Survey Date* Width___ Av. Depth___ Velocity___ Discharge___
Stream Size Normal High Water* Width___ Av. Depth___ Velocity___ Discharge___

27. Pool-Riffle* Ratio_____ 28. %Ungulate* Damage_____ 29. Riparian Rt. Bank_____ Width:Lf. Bank_____ Veg.Type_____

30. Temp: Water____ Air____ Time____ 31. Sky Cond._____ 32. Pool Habitat* Rating_____ 33. Spawning Hab* Rating____

34. Bank Soil Description_____ 35. Land Form and/or Geologic Type_____ 36. Stability Classification_____

37. Size Composition of Bottom Material. Use Percent (Total 100%)*
Sand, Silt, Clay, Muck ___
Fine Gravel 0.1-1 inch ___
Coarse Gravel 1-3 inch ___
Small Rubble 3-6 inch ___
Large Rubble, 6-12 inch_____
Small Boulder 1-3 feet_____
Large Boulder 3+ feet_____
Exposed Bedrock _____

38. Upstream Migration Block: Complete ____ High Water ____ Low Water ____

39. Other Remarks_____
_____
_____

Instructions: Use separate rating forms (6671-2 & 6671-3) for each length of stream that appears to change in character (see Part II, Recording Field Data). Complete the inventory items using maps, aerial photos, and field observations and measurements.

*Place an asterisk for estimated measurements.

Exhibit 2.—Stream Habitat Survey Form for Ocular Survey.

APPENDIX D

STREAM HABITAT CONDITION

Stream Section	Allotment Number	Miles On Public Lands	Aquatic Habitat Condition	Riparian Habitat Condition	Acres on Public Lands	Riparian Density	Percent Ungulate Damage
Adobe Creek-natural	6034	0.1	Good	Good	0.3	Moderate	10%
Adobe Creek-channelized*	6034	1.4	Poor	Fair	2.0	Light [1]	25%
Ash Creek*	6042	1.5	Good	Fair	.7	Light	70%
N. Fork Bairs Creek	6046	2.5	Excellent	Good	6.1	Moderate	0%
S. Fork Bairs Creek intermittent/ channelized	6046	0.8	Very Poor	Very Poor	0	Sparse	5%
S. Fork Bairs Creek perennial	6046	1.7	Excellent	Excellent	2.9	Heavy	0%
Bairs Creek after confluence	6046	1.0	Good	Good	2.6	Moderate	40%
Big Pine Creek	6019	0.25	Good	Fair	2.7	Sparse	20%
Birch Creek	6019 6047	2.8	Good	Excellent	13.6	Heavy	0%
Carroll Creek perennial	6046	0.08	Good	Excellent	1.2	Heavy	0%
Carroll Creek intermittent	6046	3.4	Very Poor	Good [2]		Heavy [2]	35%
Cottonwood Creek intermittent	6042	0.6	Very Poor	Very Poor		None	30%
Deep Canyon Creek perennial*	6008	1.2	Poor	Good	22.7	Impenetrable	0%
Deep Canyon Creek intermittent	6008	1.5	Very Poor	Very poor	2.3	None	0%
Diaz Creek lower canyon	6046	1.25	3	Excellent	7.0	Impenetrable	0%
Diaz Creek intermittent	6046	1.5	Very Poor	Very Poor	0.8	Sparse	70%
Diaz Creek upper perennial	6046	0.75	Poor	Excellent	7.2	Impenetrable	0%
George Creek lower (S27)	6046	0.75	Excellent	Good	1.5	Moderate	10%
George Creek-upper	6046	2.75	Excellent	Excellent	10.0	Heavy	0%
Goodale Creek	None	1.7	Excellent	Good	4.1	Moderate	0%
Hogback Creek upper (S19)	6046	0.75	Fair	Fair	1.1	Light	15%
Hogback-lower	6046	1.25	Fair	Good	6.2	Impenetrable	0%
Horton Creek	6008	2.0	Excellent	Excellent	4.4	Moderate	0%
Hot Creek-gorge	6018	0.25	Good	Good	0.9	Moderate	0%
Hot Creek-meadow	6018	0.25	Good	Good	1.0	Light	30%
Independence	6014	2.6	Good	Excellent	6.9	Moderate	0%
Little Hot Creek	6017	0.5	Poor	Very Poor		None	50%
Lone Pine Creek lower (S29, R36E)	6046	0.75	Poor	Very Poor	3.0	Sparse	0%
Lone Pine Creek middle (S27, 30)	6046	2.15	Excellent	Excellent	5.6	Heavy	0%
Lone Pine Creek upper (S28R35E)	6046	2.0	Good	Good	5.0	Moderate	0%
N Fork Lubkin Creek perennial	6046	2.0	Fair	Good	1.3	Heavy	0%
S. Fork Lubkin Creek perennial	6046	3.0	Poor	Fair	0.2	Moderate	0%

STREAM HABITAT CONDITION

Stream Section	Allotment Number	Miles On Public Lands	Aquatic Habitat Condition	Riparian Habitat Condition	Acres on Public Lands	Riparian Density	Percent Ungulate Damage
Marble Creek upper (NE¼S14,S11)	6025	0.75	Good	Good	3.0	Impenetrable	0%
Marble Creek lower (channelized)*	6025	2.65	Fair	Very Poor	6.9	Sparse [1]	80%
McGee Creek	6008	1.7	Excellent	Excellent	9.3	Heavy	0%
Birch Creek-nonpiped White Mtn.	6025	2.8	Good	Excellent	1.2	Heavy	0%
Montgomery Creek intermittent	6025 6038	2.5	Very Poor	Very Poor	1.2	None	0%
Pine Creek upper (S19,24)	6008	1.3	Fair	Good	5.9	Heavy	0%
Pine Creek lower (S17, 18, 20)	None	0.5	Fair	Fair	2.8	Sparse	0%
Rawson Creek	6016	0.5	Good	Excellent	2.7	Impentrable	0%
Rock Creek	6032	1.7	Excellent	Excellent	8.2	Moderate	0%
Sawmill Creek*	6015	0.5	Fair	Very Poor	1.2	Sparse	70%
Shepherd Creek	6014	5.1	Good	Good	13.9	Heavy	0%
Silver Canyon Creek channelized	6040	1.0	Fair	Very Poor	1.2	Sparse [1]	30%
Symes Creek-burned	6014	1.75	Poor	Very Poor	0.7	Sparse	
Symes Creek-unburned	6014	1.0	Fair	Good	3.0	Heavy	0%
Taboose Creek lower	6047	0.25	Excellent	Good	1.2	Moderate	50%
Taboose Creek upper	6047	0.75	Excellent	Excellent	3.6	Moderate	5%
Thibaut Creek	6015	1.4	Fair	Excellent	3.9	Impenetrable	0%
Tuttle Creek lower (S31, 32, T15S)	6046	3.5	Good	Excellent	4.5	Impenetrable	0%
Tuttle Creek upper (S1, 9, 11, 12, T16S)	6046	1.0	Excellent	Excellent	8.6	Heavy	0%

* Habitat status trend is declining.

1/ Channelized-banks were clear at outset
2/ Localized sections on seeps
3/ Not observed
4/ Burned 1977

APPENDIX E
VISUAL RESOURCES

All landscapes have a readily identifiable character, regardless of size, location, or land use. Those landscapes that possess or have potential for a greater degree of visual variety are more desirable than those that tend to be monotonous. Each characteristic landscape is determined by the features that are seen and their arrangement in the landscape composition. These landscape features are the landform, vegetation and structures. Each particular feature is defined by the four basic elements of form, line, color and texture. All of the basic elements are present in every landscape, but exert various degrees of visual influence. The more elements that exert a strong visual influence or contrast in the landscape, the stronger or more interesting the landscape character. The degree of variety and harmony among the basic elements determines whether or not a given landscape is pleasant to view.

The Four Basic Elements are described as follows:

Form. Form is generally considered as the mass of an object.

Line. Lines found in the natural landscape are usually the result of an abrupt contrast in form, texture, or color.

Color. Color is a phenomenon of light or visual perception that enables one to distinguish between otherwise identical objects - a hue as contrasted to black, white, or gray.

Texture. Texture is the result of size, shape, and placement of parts, their uniformity, and the distance from which they are being observed.

Visual Resource Inventory

The BLM Visual Resource Management System (VRM) evaluates the landscape utilizing three factors: scenic quality, visual sensitivity, and distance zones. These factors are used to classify all lands into one of five VRM classes. Each of these classes contains a specific management objective for maintaining or enhancing visual resource values.

Scenic Quality

Land forms are the key indicators in delineating scenic quality rating unit boundaries. All of the scenery within each rating unit is of the same nature. This overall landscape composition is described by the landscape features (i.e. landform, vegetation, and structures) and their elements of form, line, color, and texture. Cultural modifications are evaluated and rated as having low, medium, or high visual significance. Each area of distinctive scenery is rated for overall scenic quality. The range of scores are grouped into three classes of scenic quality: A, B, or C.

Visual Sensitivity

Visual sensitivity levels indicate the relative degree of user interest in visual resources and concern for changes in the existing landscape character. The criteria for determining visual sensitivity are user volume (both vehicular and pedestrian) and expressed user attitudes toward change.

Distance Zones

Distance zones are determined in the field by acutally travelling each route and observing the area that can be viewed. The zones are delineated by the following criteria:

Foreground-Middleground Zone. The area seen from a distance of three to five miles where activities may be viewed in detail. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape.

Background Zone. This is the remaining area which can be seen from each travel route to approximately 15 miles. Vegetation should be visible at least as patterns of light and dark.

Seldom Seen Zone. These lands are identified as unseen or beyond the approximate 15-mile limit from key observation points.

Visual Resource Management Classes

The determination of the VRM class, and therefore the VRM objective, for a particular area is based upon consideration of the various combinations of the three inventory variables (i.e. scenic quality, visual sensitivity, and distance zones). The matrix used to arrive at the management class for each area is shown below. These VRM classes describe the degree of modification allowed in the basic elements of the landscape.

- UPLAND VISUAL RESOURCE INVENTORY AND EVALUATION

Matrix For Determining Visual Resource Management Classes

	VISUAL SENSITIVITY						
	high			medium			low
special areas	I	I	I	I	I	I	I
SCENIC QUALITY A	II	II	II	II	II	II	II
SCENIC QUALITY B	II	III	III* / IV	III	IV	IV	IV
SCENIC QUALITY C	III	IV	IV	IV	IV	IV	IV
DISTANCE ZONES	fg-mg	bg	ss	fg-mg	bg	ss	ss

* If the area being evaluated is adjacent to any VRM class III or higher, select class III; if lower, select VRM class IV.

APPENDIX F

REPRESENTATIVE BEEF COW BUDGET — 1978

300 HEAD

SALES	HEAD	AVERAGE WEIGHT	PRICE/CWT	TOTAL VALUE
Steers	120	450	$51.00	$27,540
Heifers	60	425	40.33	10,284
Cull Cows	51	950	21.50	10,417
TOTAL				$48,240
TOTAL/COW				$ 160.80

CASH COSTS	TOTAL COSTS	COST/COW
BLM Permit	$ 1,935	6.45
Forest Permit	2,793	9.31
Salt & Mineral	364	1.21
Veterinary & Medicine	1,536	5.12
Trucking	946	3.15
Marketing	180	.60
Pasture Rent	5,042	16.81
Fuels & Lub.	1,690	5.63
Repairs	995	3.32
Hired Labor	32	.11
Interest on Operating Capital	1,234	4.11
Land Tax	0	0
General Farm Overhead	2,205	7.35
Insurance	1,077	3.59
Other Taxes	17	.06
TOTAL	$20,046	$ 66.82

OTHER COSTS	TOTAL COST	COST/COW
Value of Family Labor	$ 7,992	$ 26.64
Depreciation	$ 1,258	4.19
Interest on Investment other than Land	12,408	41.36
Management Charge	3,173	10.58
TOTAL	24,831	82.77
TOTAL ALL COSTS	$44,877	$149.59

Return above Cash Costs	$28,194	$ 93.98
Return above Cash Cost & Family Labor	$20,202	67.34
Return to Total Investment & Management	$18,944	$ 63.15

Source: Adapted from a Budget supplied by Dr. Kerry Gee of ESCS (USDA), Ft. Collins, CO.

APPENDIX G

REPRESENTATIVE SHEEP OPERATION BUDGET

4920 Ewes
1080 Rams & Replacements

6000 Sheep

SALES	UNIT	NUMBER	AVERAGE WEIGHT	PRICE/CWT	TOTAL VALUE
Slaughter Lambs	Head	4,440	104	$64.75	$298,990
Cull Ewes	Head	720	100	14.00	10,080
Wool	Pounds	6,200	9.10	.74	41,751
Wool Incentive Payment	Pounds	41,750		.45	18,788
Unshorn Lamb Payment		4,618		1.34	6,188
TOTAL					$375,797
TOTAL/EWE					$ 76.38

CASH COSTS	TOTAL COST	COST/EWE
BLM Permit	$ 1,350	$ .27
Forest Service Permit	3,968	.81
Salt & Minerals	1,411	.29
Spary & Dipping	186	.04
Vet & Medicine	1,309	.27
Marketing	447	.09
Trucking	450	.09
Shearing & Tagging	9,362	1.90
Organizations	382	.08
Legal & Account	3,677	.75
Predator Control	784	.16
Ram Death Loss	2,175	.44
Gen. Farm Oil	7,119	1.45
Labor	80,418	16.35
Wool Storage	113	.02
Other BLM Permits	3,720	.76
Past. Rent/Lease	29,964	6.09
Fuel & Lub	4,749	.97
Repairs	4,558	.93
Interest on Oper. Capital	11,264	2.29
Land Tax	63,054	12.82
Other Tax	678	.14
Insurance	3,490	.71
TOTAL	234,628	47.69

OTHER COSTS	TOTAL COST	COST/EWE
Depreciation	$ 27,227	$ 5.53
Interest on Investment other than Land	42,180	8.57
Interest on Land Investment	317,157	64.47
TOTAL	386,564	78.57
TOTAL ALL COSTS	621,192	126.26

REPRESENTATIVE SHEEP OPERATION BUDGET — BENTON—OWENS VALLEY

	TOTAL	PER EWE
Return Above Cash Costs	$141,169	$28.69
Return to Total Investment	113,942	23.16
Return to Land Investment	71,762	14.59

100% Docking Rate; 8% Lamb Loss Docking to Market; 18% Replacement Rate; 6% Ewe Loss; 12% of Ewes Sold as Culls; 9.1 LB Fleece Weight; 30 Ewes per Ranch; 6% of Annual Feed is from BLM in Benton-Owens area.

Source: Adapted from a Budget supplied by Dr. Kerry Gee of ESCS (USDA)' Ft. Collins, CO.

APPENDIX H

IMPACTS TO WATER QUALITY AND STREAM CHANNEL STABILITY

				NATURE AND INTENSITY OF IMPACT								
				WATER QUALITY				CHANNEL STABILITY				
Grazing Element	Allotment	Streams	Mileage	Current Conditions	Alternative 1	Alternative 2	Alternative 3	Alternative 3	Current Conditions	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Range Improvements:													
Fencing	Marble Creek	Birch	1.5	Good	N	-L	-L	NA	Good	N	-L	-L	NA
		Marble	3.4	Fair	-H	+H	+H	NA	Good	-M	+M	+M	NA
	Ash	Ash	1.5	Fair	-H	+H	+H	NA	Good	-M	+M	+M	NA
	Laws	Silver Canyon	1.0	Fair	-L	+L	+L	NA	Fair	-M	+M	+M	NA
	Sawmill Creek	Sawmill	0.5	Fair	-H	+H	+H	NA	Good	-M	+M	+M	NA
		Thibaut	1.4	Good	-M	+M	+M	NA	Good	-M	+M	+M	NA
Water Developments:	Marble Creek	Birch (Whites)	1.5	Good	N	+L	+L	NA	Good	N	+L	+L	NA
		Marble	3.4	Fair	-H	*	*	NA	Good	-M	*	*	NA
		Montgomery	1.25	Fair	-M	+M	+M	NA	Poor	-M	+M	+M	NA
	Ash	Ash	1.5	Fair	-H	*	*	NA	Good	-M	*	*	NA
	Independence	Bairs	2.75	Good	N	+L	+L	NA	Good	N	+L	+L	NA
		Bairs, N'F'	2.5	Good	N	+L	+L	NA	Good	N	+L	+L	NA
		Independence	2.6	Fair	-M	+M	+M	NA	Fair	-M	+M	+M	NA
		Shepherd	5.1	Good	-L	+L	+L	NA	Fair	-L	+L	+L	NA
		Symmes	2.75	Fair	-L	+L	+L	NA	Fair	-L	+L	+L	NA
	Alabama Hills	Carrol	3.5	Good	-L	+L	+L	NA	Fair	N	N	N	NA
		Hogback	3.0	Good	-L	+L	+L	NA	Fair	-L	+L	+L	NA
		Lone Pine	4.9	Fair	-M	+M	+M	NA	Fair	-M	+M	+M	NA
		Lubkin NF	2.0	Fair	-L	+L	+L	NA	Fair	-M	+M	+M	NA
		Lubkin, SF	3.0	Fair	-L	+L	+L	NA	Good	N	N	N	NA
	West Crater Mountain	Big Pine	0.25	Good	N	N	N	NA	Fair	-L	+L	+L	NA
	Granite Mountain	Adobe	1.5	Good	-M	+M	+M	NA	Good	-L	+L	+L	NA
	Bramlette	Montgomery	1.25	Fair	N	+L	+L	NA	Poor	-L	+L	+L	NA
	Red Mountain	Taboose	1.0	Good	-L	+L	+L	NA	Good	-L	+L	+L	NA
	George Cr.	George	1.0	Good	N	+L	+L	NA	Fair	-L	+L	+L	NA
Grazing Systems:													
Rest—Rotation	Round Valley	Pine	1.3	Fair	N	N	N	NA	Fair	N	-L	-L	NA
	Ash	Ash	1.5	Fair	-L	*	*	NA	Good	-L	*	*	NA
	Marble Creek	Montgomery	1.25	Fair	N	-L	-L	NA	Poor	-L	-M	-M	NA
Deferred Rotation	Independence	Independence	2.6	Fair	N	+L	+L	NA	Fair	N	N	N	NA
		Symmes	2.75	Fair	N	+L	+L	NA	Fair	N	N	N	NA
	Alabama Hills	Lone Pine	4.9	Fair	N	+L	+L	NA	Fair	N	N	N	NA
		Lubkin, NF	2.0	Fair	N	+L	+I	NA	Fair	N	N	N	NA
		Lubkin, SF	3.0	Fair	N	+L	+L	NA	Good	N	N	N	NA

Grazing Element	Allotment	Streams	Mileage	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Changes in:													
Livestock Type	Keogh	Rawson	0.5	Fair	+L	-L	-L	NA	Good	+L	-L	-L	NA
	Round Valley	Horton	2.0	Good	-L	+L	+L	NA	Good	-L	+L	+L	NA
		Pine	1.3	Fair	-L	+L	+L	NA	Fair	-L	+L	+L	NA
Stocking Level	Round Valley	Pine	1.3	Fair	N	-L	N	+L	Fair	N	N	+L	+L
	Marble Creek	Birch (Whites)	1.5	Good	N	N	+L	+L	Good	N	N	+L	+L
		Marbie	3.4	Fair	-H	*	*	+H	Good	-M	*	*	+M
		Montgomery	1.25	Fair	-M	-L	+L	+M	Poor	-M	-L	+M	+H
	Ash	Ash	1.5	Fair	-H	*	*	+H	Good	-M	*	*	+M
	Independence	Bairs	2.75	Good	N	N	N	+L	Good	N	N	N	+L
		Bairs, NF	2.5	Good	N	N	N	+L	Good	N	N	N	+L
		independence	2.6	Fair	-L	-L	+L	+M	Fair	N	N	N	+L
		Shepherd	5.1	Good	N	N	N	+L	Fair	N	N	N	+L
		Symmes	2.75	Fair	-L	-L	+L	+M	Fair	-L	+L	+L	+L
	Alabama Hills	Bairs	0.75	Good	N	N	+L	†M	Good	N	N	+L	+L
		Carroi	3.5	Good	N	N	+L	+M	Fair	N	N	+L	+L
		Diaz	3.5	Good	N	N	+L	+M	Fair	N	N	+L	+L
		George	2.5	Good	N	N	+L	+M	Fair	-L	+L	+L	+M
		Hogback	3.0	Good	N	N	+L	+M	Fair	-L	+L	+L	+M
		Lone Pine	4.9	Fair	-M	+L	+M	+H	Fair	-M	+L	+M	+H
		Lubkin, NF	2.0	Fair	-M	+L	+M	+H	Poor	-M	+L	+M	+H
		Lubkin, SF	3.0	Fair	-M	+L	+M	+H	Good	N	N	+L	+M
		Tuttie	4.5	Good	N	N	+L	+M	Good	N	N	+L	+M
	West Crater Mountain	Big Pine	0.25	Good	N	N	N	+L	Fair	N	N	N	+L
		Birch (Sierra)	2.8	Good	N	N	N	+L	Good	N	N	N	+L
	Granite Mountain	Adobe	1.5	Good	-L	-M	-M	+M	Good	-L	-M	-M	+M
	Bramiette	Montgomery	1.25	Fair	-L	+M	+M	+M	Poor	-M	+M	+M	+H
	Laws	Silver Canyon	1.0	Fair	-L	*	*	+L	Fair	-L	*	*	+L
	Red Mountain	Taboose	1.0	Good	N	N	+L	+L	Good	N	N	+L	+L
	East Crater Mountain	Big Pine	0.25	Good	N	N	N	+L	Fair	N	N	N	+L
	George Creek	George	1.0	Good	N	N	N	+L	Fair	N	N	N	+L
	Sawmill Creek	Sawmili	0.5	Fair	-M	*		+M	Good	-L	*	*	+L
	Hot Creek	Hot	0.5	Fair	-M	+L	+M	+M	Good	-M	+L	+M	+M
		Little Hot	0.5	Poor	-H	+L	+M	+H	Fair	-M	+L	+M	+M
	Bishop Unalioted	Deep Canyon	2.7	Poor	-H	+H	+H	+H	Poor	-H	+H	+H	+H
		McGee	1.7	Fair	-M	+M	+M	+M	Fair	-M	+M	+M	+M
AliotmentBoundaries	Bishop Unalloted	Deep Canyon	2.7	Poor	-M	+M	+M	NA	Poor	-M	+M	+M	NA
		McGee	1.7	Fair	-L	+L	+L	NA	Fair	-L	+L	+L	NA
Seasons of Use	Round Valley	Horton	2.0	Good	-L	-M	-M	NA	Good	-L	-M	-M	NA
		Pine	1.3	Fair	-L	-M	- M	NA	Good	-L	-M	-M	NA

Grazing Element	Allotment	Stream	Mileage	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Current Condition	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Ash Creek	Ash	1.5	Fair	N	*	*	NA	Good	N	*	*	NA
	Marble Creek	Birch (Whites)	1.5	Good	+L	-L	-L	NA	Good	+L	-L	-L	NA
		Marble	3.4	Fair	+L	*	*	NA	Good	+L	*	*	NA
		Montgomery	1.25	Fair	+L	-L	-L	NA	Poor	+M	-M	-M	NA
	West Crater Mountain	Big Pine	0.25	Good	+L	N	N	NA	Fair	+L	N	N	NA
		Birch (Sierras)	2.8	Good	+L	N	N	NA	Good	+L	N	N	NA
	East Crater Mountain	Big Pine	0.25	Good	+L	N	N	NA	Fair	+L	N	N	NA
	Red Mountain	Taboose	1.0	Good	+L	N	N	NA	Good	+L	N	N	NA
	Granite Mountain	Adobe	1.5	Good	+M	-M	-M	NA	Good	+L	-L	-L	NA
Season of Use	Bramlette	Montgomery	1.25	Fair	-L	+L	+L	NA	Poor	-M	+M	+M	NA
	Laws	Silver Canyon	1.0	Fair	N	*	*	NA	Fair	N	*	*	NA
	George Creek	George	1.0	Good	+L	-L	-L	NA	Fair	+L	-L	-L	NA
	Keough	Rawson	0.5	Fair	+L	-L	-L	NA	Good	+L	-L	-L	NA
	Sawmill	Sawmill	0.5	Fair	+M	*	*	NA	Good	+L	*	*	NA
		Thibaut	1.4	Good	+L	-L	-L	NA	Good	+L	-L	-L	NA
	Hot Creek	Hot	0.5	Fair	-M	-M	-M	NA	Good	-L	-L	-L	NA
		Little Hot	0.5	Poor	-M	-M	-M	NA	Fair	-L	-L	-L	NA

1/ Impacts are long-term
NA = Not applicable
L = Low impact
M = Moderate impact
H = High impact
N = Negligible impact
— = Negative impact
+ = Positive impact

2/ Only streams within an allotment with dicernible or potential impacts are listed. All other streams within an allotment are considered to have no or negligible impacts. U
* Under alternatives 2 and 3 Ash, Marble, Silver Canyon, and Sawmill Creeks will be fenced to exclude livestock use.

APPENDIX I

ECOLOGICAL SITE CHARACTERISTICS

Ecological Site (Precipitation zone)	Acres	Percent ES Area	Response Potential	Dominat Climax Plant Species*	Annual Production Favorable Year	Annual Production Unfavorable Year	Current Range Conditions (Acres) Good	Current Range Conditions (Acres) Fair	Current Range Conditions (Acres) Poor
GRAVELLY LOAM 4—6" p.z.	21257	3.9	L	Shadscale	300	100	8400	5256	7601
ARID LIMY UPLAND 4—6" p.z.	11988	2.2	L	Creosote bush Shadscale	350	150	11437	551	0
SUBALPINE FOREST 8—10" p.z.	1260	0.2	O	Limber Pine-Bristlecone Pine	650	350	1260	0	0
UPLAND ARID LOAM 4—6" p.z.	39772	7.3	L	Shadscale	300	100	34422	5350	0
ARID LOAM 4—6" p.z.	16752	3.1	L	White bursage, Allscale shadscale	350	150	6792	8934	1026
ALKALI ARID LOAM 4—6"	5126	0.9	L	Mixed saltshrubs	400	200	4595	0	531
ALKALI SAND 4—6" p.z.	1064	0.2	O	Mojave Seablite-Black Greasewood	100	25	1064	0	0
MAHOGANY SLOPE 8—10" p.z.	2833	0.5	O	Singleleaf Pinyon Pine-Cur leaf Mtn. Mahogany	1000	600	2833	0	0
SALINE MEADOW 4—6" p.z.	168	0.03	M	Inland saltgrass	1600	800	128	40	0
ALKALI MARSH 6—10" p.z.	20	0.003	M	Rushes, Bulrushes, sedges	2000	1500	20	0	0
ALKALI WET MEADOW 8—12" p.z.	1999	0.4	H	Sedges-Inland Saltgrass	1600	800	0	1127	872
ALKALI ASHY SAND 8—12" p.z.	9126	1.7	H	Inland Saltgrass Basin Wildrye-Rubber Rabbitbrush	1000	600	4947	3484	695
ASHY LOAMY SAND 10-14" p.z.	33254	6.1	H	Mountain Big Sage brush-Antelope Bitterbrush	1000	600	13263	14482	5509
DEEP ASHY SAND 10—12" p.z.	17244	3.2	M	Antelope Bitter-brush Basin Big Sagebrush	900	700	3797	12637	810

APPENDIX I

ECOLOGICAL SITE CHARACTERISTICS

Ecological Site (Precipitation zone)	Acres	Percent ES Area	Response Potential	Dominant Climax Plant Species*	Annual Production Favorable Year	Annual Production Unfavorable Year	Current Range Conditions (Acres) Good	Current Range Conditions (Acres) Fair	Current Range Conditions (Acres) Poor
SHALLOW LOAMY SAND 10—14" p.z.	170	0.03	M	Low sagebrush	350	200	0	170	0
ROCKY LOAMY BENCHES 8—12" p.z.	13486	2.5	L	Wyoming Big Sage brush/Single leaf Pinyon Pine	700	500	10014	2166	1306
STEEP ROCKY LOAM 8—12" p.z.	12298	2.3	L	Singleleaf Pinyon Pine/Mountain Big Sagebrush-Antelope Bitterbrush	500	300	12298	0	0
GRANITIC FAN 6—8" p.z.	23022	4.2	M	Wyoming Big Sage-brush/Desert Needlegrass	400	300	4274	10030	8718
SHALLOW LOAMY SAND 6—8" p.z.	25762	4.8	M	Blackbrush, Desert Needlegrass	400	300	5103	13785	6874
LOAMY SAND 6—8" p.z.	97473	18.0	M	Spiny hopsage, Nevada ephedra and other desert shrubs	400	300	8551	85220	3702
GRANITIC FAN 8—10" p.z.	38845	7.2	M	Wyoming Big Sage-brush Desert Bitterbrush	700	500	11486	26621	738
STEEP SANDY SLOPE 8—10" p.z.	18160	3.4	L	Mountain Big Sagebrush/Singleleaf Pinyon Pine	600	400	17961	199	
CINDERY LOAMY SAND 4—8" p.z.	14038	2.6	L	Mixed desert shrubs	350	250	3472	9803	763
ROCKY LOAMY SAND 6—8" p.z.	27618	5.1	L	Little leaf horsebrush, Needleleaf Rabbitbrush, Shadscale	200	100	3377	24241	0
ASHY LOAMY SAND 6—8" p.z.	41773	7.7	M	Four wing saltbush-Fremont dalea/Indian ricegrass	400	200	6832	34941	0
SUBALPINE SAGEBRUSH 8—10" p.z.	2925	0.5	O	Low sagebrush-Mountain big sagebrush	400	300	2925	0	0
SANDY JUNIPER FLAT 8—10" p.z.	1668	0.3	L	Utah Juniper/Wyoming Big Sagebrush	600	400	0	1668	0

APPENDIX I

ECOLOGICAL SITE CHARACTERISTICS

Ecological Site (Precipitation zone)	Acres	Percent ES Area	Response Potential	Dominant Climax Plant Species*	Annual Production Favorable Year	Annual Production Unfavorable Year	Current Range Conditions (Acres) Good	Current Range Conditions (Acres) Fair	Current Range Conditions (Acres) Poor
BOTTOMLAND LOAMY 8—10" p.z.	2079	0.4	H	Basin Wildrye/Basin Big Sagebrush	2000	1200	0	0	2079
GRAVELLY SAND 10—12" p.z.	2619	0.5	L	Antelope Bitterbrush Desert Peach	500	300	662	1267	690
SANDY 8—10" p.z.	37414	6.9	M	Indian Ricegrass Wyoming Big Sagebrush	800	400	8779	11113	17522
SANDY 6—8" p.z.	14793	2.7	M	Indian ricegrass/ Wyoming Big Sagebrush	600	300	720	265	13808
UNCLASSIFIED (Rock outcrop, waste areas etc.)	5816	1.1	O						
TOTALS	541822						189412	273350	73244

*See Appendix 2—1 for Scientific Names

Response potential L=Low, M=Moderate, H=High and O=None

APPENDIX J

CURRENT AND PROJECTED ECOLOGICAL RANGE CONDITIONS
BY ALLOTMENT AND ECOLOGICAL RANGE SITE

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres)				
			CURRENT	PROJECTED (YEAR 2005)			
				Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
0001 Keough	Shallow Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	1029	1029	1029	1029	1029
		Poor	0	0	0	0	0
0002 Black Rock	Cindery Loamy Sand 4-8"p.z.	Good	0	0	0	0	0
		Fair	0	963	963	0	0
		Poor	963	0	0	963	963
0003 Black Lake Unalloted	Sandy 8-10"p.z.	Good	0	0	0	0	0
		Fair	0	2087	1391	0	0
		Poor	2782	695	1391	2782	2782
	Ashy Loamy Sand 10-14"p.z.	Good	355	355	355	355	355
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Bottom Loamy 8-10"p.z.	Good	0	0	0	0	0
		Fair	0	190	125	0	0
		Poor	250	60	125	250	250
	Steep Rocky Loam 8-12"p.z.	Good	4132	4132	4132	4132	4132
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Rock Outcrop	N/A	45	45	45	45	45
0004 Fish Slough	Ashy Loamy Sand 6-8"p.z.	Good	0	777	618	618	200
		Fair	1036	259	418	418	418
		Poor	0	0	0	0	418
	Rocky Loamy Sand 6-8"p.z.	Good	0	89	35	35	0
		Fair	357	268	322	322	322
		Poor	0	0	0	0	35
	Aquatic Marsh	Good	103	103	103	103	103
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6007 Volcanic Tablelands	Ashy Loamy Sand 6-8"p.z.	Good	6312	15125	12188	6312	6312
		Fair	11751	2938	5875	11751	11751
		Poor	0	0	0	0	0
	Rocky Loamy Sand 6-8"p.z.	Good	1405	4505	2645	1405	1405
		Fair	12398	9298	11158	12398	12398
		Poor	0	0	0	0	0
	Grantic Fan 8-10"p.z.	Good	705	2548	1938	705	705
		Fair	2457	614	1224	2457	2457
		Poor	0	0	0	0	0
	Saline Meadow 6-8"p.z.	Good	0	40	40	0	0
		Fair	40	0	0	40	40
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	1134	7875	5628	1134	1134
		Fair	8988	2247	4494	8988	8988
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	268	107	0	0
		Fair	1073	805	966	1073	1073
		Poor	0	0	0	0	0

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
	Granitic Fan 6-8"p.z.	Good	283	283	283	283	283
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6008 Round Valley	Grantiic Fan 8-10"p.z.	Good	1639	3064	3064	3064	2279
		Fair	2211	786	786	786	1571
		Poor	0	0	0	0	0
	Steep Sandy Slopes 8-10"p.z.	Good	235	235	235	235	235
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Shallow Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	0	872	291	291	0
		Poor	1163	291	872	872	1163
6009 Evans	Deep Ashy Sand 10-12"p.z.	Good	0	480	480	0	0
		Fair	480	0	0	432	480
		Poor	0	0	0	48	0
	Ashy Loamy Sand 10-14"p.z.	Good	0	1858	1858	0	0
		Fair	1858	0	0	1672	1858
		Poor	0	0	0	186	0
	Gravelly Sand 10-12"p.z.	Good	355	662	477	477	355
		Fair	1227	1092	1175	1175	1227
		Poor	690	518	620	620	690
	Alkali Ashy Sand 8-12"p.z.	Good	344	344	344	310	344
		Fair	0	0	0	34	0
		Poor	0	0	0	0	0
6012 Zurich	Arid Loamy 4-6"p.z.	Good	1233	1233	1233	1233	1233
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	7430	7430	7430	7430	7430
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	176	176	176	176	176
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6013 Owens Valley	Upland Arid Loam 4-6"p.z.	Good	959	959	959	959	959
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	660	660	660	660	660
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	145	145	145	145	145
		Poor	0	0	0	0	0
6014 Independence	Granitic Fan 8-10"p.z.	Good	0	3048	3048	1524	0
		Fair	3048	265	265	1789	3313
		Poor	265	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	2115	9720	9720	7407	2115
		Fair	7605	0	0	2313	7605
		Poor	0	0	0	0	0
	Shallow Loamy Sand 6-8"p.z.	Good	160	3116	8181	5648	360
		Fair	2956	5065	0	2533	3681
		Poor	5065	0	0	0	4140

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 1 No Grazing	Alt. 2 Stock by Condition	Alt. 3 Proposed Action	Alt. 4 No Action
	Granitic Fan 6-8"p.z.	Good	170	170	170	170	170
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6015 Sawmill Creek	Loamy Sand 6-8"p.z.	Good	600	1336	968	600	600
		Fair	1472	736	1104	1472	1472
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	10	10	10	10	10
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6016 Owens Valley Common	Upland Arid Loam 4-6"p.z.	Good	320	320	320	320	320
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	318	318	318	318	318
		Poor	0	0	0	0	0
6018 Hot Creek	Ashy Loamy Sand 10-14"p.z.	Good	0	3267	1633	19	19
		Fair	3267	46	1680	3294	3294
		Poor	3	0	0	0	0
	Sandy 8-10"p.z.	Good	993	1067	1086	993	993
		Fair	148	74	55	148	148
		Poor	0	0	0	0	0
	Alkali Wet Meadow 8-12"p.z.	Good	0	0	0	0	0
		Fair	0	382	191	0	0
		Poor	382	0	191	382	382
	Shallow Loamy Sand 10-14"p.z.	Good	0	85	42	0	0
		Fair	170	85	128	170	170
		Poor	0	0	0	0	0
	Rocky Loam Benches 8-12"p.z.	Good	0	600	300	0	0
		Fair	1197	597	897	1197	1197
		Poor	0	0	0	0	0
6019 West Crater	Granitic Fan 6-8"p.z.	Good	0	0	0	0	0
		Fair	1396	1766	1766	1766	1766
		Poor	370	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	962	2065	1513	962	962
		Fair	2206	1103	1655	2206	2206
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	632	1260	1202	1162	1162
		Fair	928	300	358	398	398
		Poor	0	0	0	0	0
	Cinder Cone	N/A	46	46	46	46	46
6020 Little Round Valley	Ashy Loamy Sand 10-14"p.z.	Good	0	375	224	100	100
		Fair	497	322	473	597	597
		Poor	200	0	0	0	0
	Mahogany Slope 10-14"p.z.	Good	421	421	421	421	421
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6021 Shannon Baker	Loamy Sand 6-8"p.z.	Good	0	40	20	0	0
		Fair	80	496	288	80	80
		Poor	912	456	684	912	912
	Shallow Loamy Sand 6-8"p.z.	Good	1642	1642	1642	1642	1642
		Fair	0	0	0	0	0
		Poor	366	366	366	366	366

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt.[1] No Action
6022 Wilfred Creek	Sandy 8-10"p.z.	Good	855	3645	3645	2726	2520
		Fair	1665	0	0	1062	825
		Poor	1415	290	290	147	590
	Alkali Ashy Sand 8-12"p.z.	Good	0	340	340	0	0
		Fair	0	330	330	573	280
		Poor	670	0	0	97	390
	Ashy Loamy Sand 10-14"p.z.	Good	0	935	935	0	0
		Fair	0	935	935	470	0
		Poor	1870	0	0	1400	1870
	Alkali Wet Meadow 8-12"p.z.	Good	0	245	245	0	0
		Fair	0	245	245	122	0
		Poor	490	0	0	368	490
6023 Black Mine	Arid Loam 4-6"p.z.	Good	0	259	103	0	0
		Fair	1035	776	932	1035	1035
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	312	156	0	0
		Fair	623	311	467	623	623
		Poor	0	0	0	0	0
6024 Hammil Valley	Loamy Sand 6-8"p.z.	Good	0	2309	2309	2309	0
		Fair	4617	2308	2308	2308	4617
		Poor	0	0	0	0	0
	Granitic Fan 8-10"p.z.	Good	1216	6254	6254	6254	1216
		Fair	10075	5038	5038	5038	10075
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	189	189	189	0
		Fair	755	586	586	586	755
		Poor	90	70	70	70	90
	Rocky Loamy Sand 6-8"p.z.	Good	0	1021	1021	1021	0
		Fair	4085	3064	3064	3064	4085
		Poor	0	0	0	0	0
	Ashy Loamy Sand 6-8"p.z.	Good	80	9798	9878	9878	80
		Fair	19597	9799	9799	9799	19597
		Poor	0	0	0	0	0
6025 Marble Creek	Granitic Fan 6-8"p.z.	Good	0	2191	2191	1096	0
		Fair	2191	1147	1147	1669	2191
		Poor	1147	0	0	573	1147
	Granitic Fan 8-10"p.z.	Good	0	2160	2160	1080	0
		Fair	2160	0	0	1080	2160
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	8636	8636	4318	0
		Fair	8636	0	0	4318	8636
		Poor	0	0	0	0	0
	Ashy Loamy Sand 6-8"p.z.	Good	0	50	50	25	0
		Fair	50	0	0	25	50
		Poor	0	0	0	0	0
	Sandy 6-8"p.z.	Good	0	0	0	0	0
		Fair	0	265	265	133	0
		Poor	265	0	0	132	265
	Steep Sandy Slopes 8-10"p.z.	Good	292	292	292	292	292
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
6026 Mathieu	Rocky Loam Benches 8-12"p.z.	Good	1190	1190	1190	1070	1070
		Fair	0	0	0	120	120
		Poor	0	0	0	0	0
	Sandy 8-10"p.z.	Good	760	760	760	684	684
		Fair	0	0	0	76	76
		Poor	0	0	0	0	0
6027 Adobe Valley	Sandy 8-10"p.z.	Good	474	1888	1888	474	1888
		Fair	1414	11605	11605	13019	7845
		Poor	11605	0	0	0	3760
	Steep Rocky Loam 8-12"p.z.	Good	867	867	867	867	867
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Rocky Loam Benches 8-12"p.z.	Good	2114	2114	2114	2114	2114
		Fair	560	560	560	560	560
		Poor	0	0	0	0	0
	Bottom Loamy 8-10"p.z.	Good	0	0	0	0	0
		Fair	0	929	0	0	0
		Poor	929	0	929	929	929
	Alkali Ashy Sand 8-12"p.z.	Good	3377	5422	2877	2377	2877
		Fair	2045	0	2545	3045	2545
		Poor	0	0	0	0	0
	Alkali Wet Meadow 8-12"p.z.	Good	0	20	0	0	0
		Fair	20	0	20	20	20
		Poor	0	0	0	0	0
	Playa	N/A	369	369	369	369	369
6028 Black Lake	Steep Rocky Loam 8-12"p.z.	Good	290	290	290	290	290
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Alkali Ashy Sand 8-12"p.z.	Good	0	230	230	230	230
		Fair	230	0	0	0	0
		Poor	0	0	0	0	0
	Sandy 8-10" p.z.	Good	0	0	0	0	0
		Fair	0	150	150	150	150
		Poor	315	165	165	165	165
	Bottom Loamy 8-10"p.z.	Good	0	0	0	0	0
		Fair	0	25	25	25	25
		Poor	50	25	25	25	25
6030 Chalfant	Loamy Sand 6-8"p.z.	Good	0	1338	446	446	0
		Fair	1784	446	1338	1338	1784
		Poor	0	0	0	0	0
	Upland Arid Loam 4-6"p.z.	Good	1546	1546	1546	1546	1546
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	0	1496	600	600	0
		Poor	5985	4489	5385	5385	5985
	Rocky Loamy Sand 6-8"p.z.	Good	0	827	330	330	0
		Fair	3309	2482	2979	2979	3309
		Poor	0	0	0	0	0
	Ashy Loamy Sand 6-8"p.z.	Good	0	342	114	114	0
		Fair	456	114	342	342	456
		Poor	0	0	0	0	0

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6031 Poleta Canyon	Upland Arid Loam 4-6"p.z.	Good	2126	2126	2126	2126	2126
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	219	219	219	219	189
		Poor	0	0	0	0	30
6032 Sherwin	Steep Sandy Slopes 8-10"p.z.	Good	252	252	252	252	252
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Granitic Fan 8-10"p.z.	Good	0	814	1086	1086	0
		Fair	1086	745	473	473	1559
		Poor	473	0	0	0	0
6033 Tinemaha	Gravelly Loam 4-6"p.z.	Good	970	1198	1061	1061	970
		Fair	911	683	820	820	911
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	755	755	755	755	755
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Alkaki Arid Loam 4-6"p.z.	Good	730	730	730	730	730
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Upland Arid Loam 4-6"p.z.	Good	265	265	265	265	265
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	0	13	5	5	0
		Fair	50	37	45	45	50
		Poor	0	0	0	0	0
6034 Granite Mt.	Sandy 8-10"p.z.	Good	3043	6809	2282	2282	3043
		Fair	5021	1832	2182	2182	5598
		Poor	577	0	4177	4177	0
	Mahogany Slope 10-14"p.z.	Good	466	466	466	466	466
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Ashy Loamy Sand 10-14"p.z.	Good	801	1828	721	721	801
		Fair	280	748	330	330	1775
		Poor	1495	0	1525	1525	0
	Alkali Ashy Sand 8-12"p.z.	Good	195	609	146	146	195
		Fair	414	0	359	359	414
		Poor	0	0	104	104	0
	Bottom Loamy 8-10"p.z.	Good	0	0	0	0	0
		Fair	0	480	0	0	0
		Poor	640	160	640	640	640
	Rocky Loam Benches 8-12"p.z.	Good	3876	3960	3960	3960	3960
		Fair	84	182	182	182	182
		Poor	182	0	0	0	0
	Steep Rocky Loam 8-12"p.z.	Good	2545	2545	2545	2545	2545
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Rock Outcrop	N/A	339	339	339	339	339
6036 Adobe Lake	Alkali Ashy Sand 8-12"p.z.	Good	45	760	760	760	40
		Fair	715	0	0	0	649
		Poor	0	0	0	0	71

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
	Alkali Wet	Good	0	694	694	694	0
	Meadow 8-12"p.z.	Fair	694	0	0	0	625
		Poor	0	0	0	0	69
	Sandy						
	8-10"p.z.	Good	0	23	23	15	0
		Fair	30	7	7	15	27
		Poor	0	0	0	0	3
	Rocky Loam	Good	0	19	19	12	0
	Benches 8-12"p.z.	Fair	25	6	6	13	22
		Poor	0	0	0	0	3
	Playa	N/A	295	295	295	295	295
6037 Symons	Sandy	Good	2654	2877	2869	2869	2589
	8-10"p.z.	Fair	230	7	15	15	280
		Poor	0	0	0	0	15
	Bottomland	Good	0	0	0	0	0
	Loamy 8-10"p.z.	Fair	0	158	105	105	0
		Poor	210	52	105	105	210
	Rocky Loam	Good	40	40	40	40	36
	Benches 8-12"p.z.	Fair	0	0	0	0	4
		Poor	0	0	0	0	0
6038 Bramlette	Granitic Fan	Good	0	1961	1307	1307	0
	6-8"p.z.	Fair	2615	6025	5042	5042	2615
		Poor	7161	1790	3427	3427	7161
	Sandy	Good	720	919	985	985	720
	6-8"p.z.	Fair	265	10137	13428	13428	265
		Poor	13428	3357	0	0	13428
	Granitic Fan	Good	1605	3579	2921	2921	1605
	8-10"p.z.	Fair	2632	658	1316	1316	2632
		Poor	0	0	0	0	0
	Steep Rocky	Good	3514	3514	3514	3514	3514
	Loam 8-12"p.z.	Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Alkali Arid	Good	0	0	0	0	0
	Loam 4-6"p.z.	Fair	0	133	53	53	0
		Poor	531	398	478	478	531
	Rock Outcrop	N/A	837	837	837	837	837
6040 Laws	Gravelly Loam	Good	0	459	459	0	917
	4-6"p.z.	Fair	1835	1376	1376	1835	918
		Poor	0	0	0	0	0
	Upland Arid	Good	1230	307	307	1230	615
	Loam 4-6"p.z.	Fair	0	923	923	0	615
		Poor	0	0	0	0	0
6041 Jeffrey	Loamy Sand	Good	215	3010	2078	1147	215
	6-8"p.z.	Fair	3727	932	1863	2795	3727
		Poor	0	0	0	0	0
	Upland Arid	Good	283	283	283	283	283
	Loam 4-6"p.z.	Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Loam	Good	0	0	0	0	0
	4-6"p.z.	Fair	0	0	0	0	0
		Poor	127	127	127	127	127

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
6042 Ash Creek	Loamy Sand 6-8"p.z.	Good	0	2493	2493	2493	0
		Fair	3324	831	831	831	3324
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	0	5414	5414	5414	0
		Fair	5414	0	0	0	5414
		Poor	0	0	0	0	0
6043 Chalk Bluff	Gravelly Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	0	140	140	0	0
		Poor	1399	1259	1259	1399	1399
	Ashy Loamy Sand 6-8"p.z.	Good	440	940	940	396	440
		Fair	1028	528	528	970	1028
		Poor	0	0	0	102	0
	Loamy Sand 6-8"p.z.	Good	842	2942	2942	758	842
		Fair	4206	2106	2106	3870	4206
		Poor	0	0	0	420	0
	Rocky Loamy Sand 6-8"p.z.	Good	510	910	910	459	510
		Fair	4092	3692	3692	3120	4092
		Poor	0	0	0	1023	0
6044 Long Valley	Sandy 8-10"p.z.	Good	0	15	7	0	0
		Fair	30	15	23	30	30
		Poor	0	0	0	0	0
	Ashy Loamy Sand 8-10"p.z.	Good	0	100	25	0	0
		Fair	100	0	75	100	100
		Poor	0	0	0	0	0
	Alkali Ashy Sand 8-12"p.z.	Good	0	0	0	0	0
		Fair	0	25	8	0	0
		Poor	25	0	17	25	25
	Mahogany Slope 10-14"p.z.	Good	25	25	25	25	25
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Water	N/A	80	80	80	80	80
6045 Tobacco Flat	Ashy Loamy Sand 10-14"p.z.	Good	0	228	76	0	0
		Fair	304	76	228	304	304
		Poor	0	0	0	0	0
6046 Alabama Hills	Granitic Fan 6-8"p.z.	Good	939	3430	3430	2185	939
		Fair	2491	0	0	1245	2491
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	26719	26719	13360	0
		Fair	26719	2330	2330	14525	26719
		Poor	2330	0	0	1165	2330
	Granitic Fan 8-10"p.z.	Good	1280	2379	2379	1830	1280
		Fair	1099	0	0	549	1099
		Poor	0	0	0	0	0
	Steep Sandy Slope 8-10"p.z.	Good	0	0	0	0	0
		Fair	208	208	208	208	208
		Poor	0	0	0	0	0
	Upland Arid Loam 4-6"p.z.	Good	3847	3847	3847	3847	3847
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	80	1354	1354	551	80
		Fair	1605	1101	1101	1391	1605
		Poor	1026	256	256	769	1026

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
	Riparian	N/A	30	30	30	30	30
	Rock Outcrop	N/A	2196	2196	2196	2196	2196
6047 Red Mouhtain	Loamy Sand 6-8"p.z.	Good	1269	2589	1929	1929	1269
		Fair	2639	1319	1979	1979	2639
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	0	95	95	95	0
		Fair	953	858	858	858	953
		Poor	0	0	0	0	0
	Cinder Cone	N/A	10	10	10	10	10
6048 West Santa Rita	Arid Loam 4-6"p.z.	Good	0	0	0	0	0
		Fair	100	100	100	100	100
		Poor	0	0	0	0	0
	Alkali Arid Loam 4-6"p.z.	Good	110	110	110	110	110
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Arid Limy Upland 4-6"p.z.	Good	0	0	0	0	0
		Fair	111	111	111	111	111
		Poor	0	0	0	0	0
6049 Aberdeen	Cindery Loamy Sand 4-8"p.z.	Good	0	445	150	0	0
		Fair	2969	2524	2819	2969	2969
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	85	30	0	0
		Fair	570	485	540	570	570
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	0	111	37	0	0
		Fair	740	629	703	740	740
		Poor	0	0	0	0	0
6050 Poverty Hills	Loamy Sand 6-8"p.z.	Good	0	1367	684	0	0
		Fair	2735	1368	2051	2735	2735
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	0	405	161	0	0
		Fair	1619	1214	1458	1619	1619
		Poor	0	0	0	0	0
6051 Wells Meadow	Granitic Fan 8-10"p.z.	Good	0	0	597	597	597
		Fair	1193	1193	596	596	596
		Poor	0	0	0	0	0
	Shallow Laomy Sand 8-10"p.z.	Good	70	70	70	70	70
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
6053 Lone Tree	Loamy Sand 6-8"p.z.	Good	578	1289	1289	2000	434
		Fair	2844	2133	2133	1422	2277
		Poor	0	0	0	0	711
	Upland Arid Loam 4-6"p.z.	Good	137	137	137	137	69
		Fair	0	0	0	0	68
		Poor	0	0	0	0	0
6055 Mono Mills	Deep Ashy Sand 10-12"p.z.	Good	3797	15181	14776	3797	3797
		Fair	10979	405	810	11789	11789
		Poor	810	0	0	0	0
	Ashy Loamy Sand 10-14"p.z.	Good	12067	19180	15013	12067	18239
		Fair	9118	3888	8055	9118	2946
		Poor	1883	0	0	1883	1883

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
	Rocky Loamy Bench 8-12"p.z.	Good	2794	4291	3543	2794	2794
		Fair	1497	1124	1872	2621	2621
		Poor	1124	0	0	0	0
	Sandy 8-10"p.z.	Good	0	271	271	0	0
		Fair	361	918	90	361	1189
		Poor	828	0	828	828	0
	Alkali Ashy Sand 8-12"p.z.	Good	986	1066	1066	986	986
		Fair	80	0	0	80	80
		Poor	0	0	0	0	0
	Mahogany Slopes 8-12"p.z.	Good	182	182	182	182	182
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Gravelly Sand 10-12"p.z.	Good	307	317	317	307	307
		Fair	40	30	30	40	40
		Poor	0	0	0	0	0
	Alkali Wet Meadow 8-12"p.z.	Good	0	413	413	0	0
		Fair	413	0	0	413	413
		Poor	0	0	0	0	0
	Alkali Marsh 6-12"p.z.	Good	20	20	20	20	20
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Sandy Juniper 8-10"p.z.	Good	0	353	236	0	0
		Fair	471	118	235	471	471
		Poor	0	0	0	0	0
	Sand Flat	N/A	71	71	71	71	71
6079 East Crater	Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	200	200	200	200	200
		Poor	0	0	0	0	0
	Cindery Loamy Sand 4-8"p.z.	Good	3284	3284	3284	3284	3284
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Cinder Cone	N/A	40	40	40	40	40
6080 New Allotment	Granitic Fan 6-8"p.z.	Good	0	0	0	0	0
		Fair	0	40	40	40	0
		Poor	40	0	0	0	40
	Sandy 6-8"p.z.	Good	0	0	0	0	0
		Fair	0	120	120	120	0
		Poor	120	0	0	0	120
	Ashy Loamy Sand 6-8"p.z.	Good	0	500	500	500	0
		Fair	1019	519	519	519	1019
		Poor	0	0	0	0	0
	Granitic Fan 8-10"p.z.	Good	3818	3818	3818	3818	3818
		Fair	370	370	370	370	370
		Poor	0	0	0	0	0
6081 Casa Diablo	Sandy 10-12"p.z.	Good	0	1532	1532	0	0
		Fair	1532	0	0	1532	1379
		Poor	0	0	0	0	153
	Ashy Loamy Sand 10-14"p.z.	Good	0	661	661	0	0
		Fair	661	0	0	661	595
		Poor	0	0	0	0	66

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
6082 George Creek	Granitic Fan 8-10"p.z.	Good	1209	1359	1289	1309	1089
		Fair	310	160	230	210	430
		Poor	0	0	0	0	0
	Granitic Fan 6-8"p.z.	Good	1137	1173	1137	1137	1037
		Fair	0	0	0	0	100
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	504	504	504	504
		Fair	504	0	0	0	0
		Poor	0	0	0	0	0
0000 Bishop Unalloted	Shallow Loamy Sand 6-8"p.z.	Good	2791	7292	7292	7292	2791
		Fair	9694	5403	5403	5403	5157
		Poor	280	70	70	70	4817
	Granitic Fan 6-8"p.z.	Good	1040	1240	1240	1240	1040
		Fair	1347	1147	1147	1147	1147
		Poor	0	0	0	0	200
	Rocky Loamy Sand 6-8"p.z.	Good	1467	1467	1467	1467	1467
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Steep Sandy Slopes 8-10"p.z.	Good	220	220	220	220	220
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Granitic Fan 8-10"p.z.	Good	943	943	943	943	943
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Loamy Sand 6-8"p.z.	Good	0	385	385	385	0
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
0000 South Owens Valley Unalloted	Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	786	786	786	786	786
		Poor	460	460	460	460	460
	Cindery Loamy Sand 4-8"p.z.	Good	2830	2830	2830	2830	2830
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Saline Meadow 4-8"p.z.	Good	51	51	51	51	51
		Fair	115	115	115	115	115
		Poor	0	0	0	0	0
	Alkali Arid Loam 4-6"p.z.	Good	360	360	360	360	360
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	40	40	40	40	40
		Fair	40	40	40	40	40
		Poor	0	0	0	0	0
0000 Hilton Creek Unalloted	Ashy Loamy Sand 10-14"p.z.	Good	0	0	0	0	0
		Fair	249	264	264	264	264
		Poor	15	0	0	0	0
0000 Little Round Valley Unalloted	Steep Rocky Loam 8-12"p.z.	Good	120	120	120	120	120
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Ashy Loamy Sand 10-14"p.z.	Good	40	40	40	40	40
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0

ALLOTMENT	ECOLOGICAL RANGE SITE	CONDITION CLASS	ECOLOGICAL RANGE SITE CONDITIONS (in Acres) CURRENT	PROJECTED (YEAR 2005) Alt. 4 No Grazing	Alt. 3 Stock by Condition	Alt. 2 Proposed Action	Alt. 1 No Action
0000 Hammil Valley Unalloted	Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	32	32	32	32	32
		Poor	0	0	0	0	0
	Ashy Loamy Sand 6-8"p.z.	Good	0	0	0	0	0
		Fair	8	8	8	8	8
		Poor	0	0	0	0	0
0000 Benton Range Unalloted	Steep Rocky Loam 8-12"p.z.	Good	830	830	830	830	830
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
0000 North Owens Valley Unalloted	Shallow Loamy Sand 6-8"p.z.	Good	430	430	430	430	430
		Fair	106	106	106	106	106
		Poor	0	0	0	0	0
	Granitic Fan 8-10"p.z.	Good	0	0	0	0	0
		Fair	30	30	30	30	30
		Poor	0	0	0	0	0
0000 Southern Inyos Unalloted	Arid Limy Upland 4-6"p.z.	Good	11437	11437	11437	11437	11437
		Fair	440	440	440	440	440
		Poor	0	0	0	0	0
	Upland Arid Loam 4-6"p.z.	Good	29059	29059	29059	29059	29059
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Steep Sandy Slopes 8-10"p.z.	Good	17062	17062	17062	17062	17062
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Subalpine Forest 8-10"p.z.	Good	1260	1260	1260	1260	1260
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Mahogany Slope 8-10"p.z.	Good	1739	1739	1739	1739	1739
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Subalpine Sagebrush 8-10"p.z.	Good	2925	2925	2925	2925	2925
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Arid Loam 4-6"p.z.	Good	4684	4684	4684	4684	4684
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Alkali Arid Loam 4-6"p.z.	Good	3395	3395	3395	3395	3395
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Saline Meadow 4-8"p.z.	Good	77	77	77	77	77
		Fair	0	0	0	0	0
		Poor	0	0	0	0	0
	Alkali Sand 4-6"p.z.	Good	1123	1123	1123	1123	1123
		Fair	567	567	567	567	567
		Poor	0	0	0	0	0
	Rock Outcrop	N/A	1355	1355	1355	1355	1355

APPENDIX K

METHODOLOGY FOR 25 YEAR PREDICTION OF ECOLOGICAL RANGE CONDITION

The following method was used to estimate the change in ecological conditions and livestock forage production in 25 years by management alternative. The degree of change from existing livestock use and management was analyzed against the expected response potential of each ecological site.

The criteria for establishing the degree of change from existing livestock use and managment are listed below.

1. Change in season of use.
2. Change in amount of livestock use.
3. Change in kind of livestock.
4. Change in areas of use.
5. Prescribed management systems
6. Prescribed vegetative treatments

After analyzing the above criteria for each allotment, the degree of change from the existing situation was rated into one of the three categories of high, moderate, low, or no change.

Each ecological site was then assigned a response rating of high, moderate, or low based on its potential in terms of expected change in plant species from the existing plant community as related to time.

Example:

High response - Alkali Wet Meadow Community

Low Response - Salt Bush Community

Factors considered in this rating included:

1. expected soil moisture availability
2. precipitation zone
3. soil fertility
4. topographic position of site
5. plant species composition

The ratings for each ecological site were subjected to a standard analysis. Using the following matrix, the expected response was expressed in terms of percentage of site acres to change from the current condition class.

Ecological Site Response Potential	Degree of Change						
	Low		Moderate		High		
	Upward	Downward	Upward	Downward	Upward	Downward	None
Low	10%	-25%	10%	-75%	25%	-100%	0
Mod.	25%	-10%	50%	-25%	75%	-75%	0
High	75%	-10%	100%	-10%	100%	-25%	0

This analysis then gives the acres of ecological range site per condition class.

For example, in the Adobe Lake allotment (6036) there exist 694 acres of an Alkali Meadow ecological range site in the 8-12" precipitation zone, a site having a high response rating. All 694 acres are currently in a fair condition class. Under the No Grazing alternative, a high beneficial change in management would occur. Therefore 694 acres advance to at least to a good condition class. Under the Proposed Action, the 50% reduction in stocking which would occur was considered a moderate beneficial change. Since the response potential of the site was high, 100% of the area was expected to improve to good condition. Under the No Action alternative, grazing would continue at about 13% above carrying capacity, a low negative impact which would result in 10% of the site moving downward to a poor condition class.

Forage Production Projections

The 25 year forage production projections were derived from the projected ecological range condition acreage and from the 1978 forage inventory data. (Refer to Appendix B for forage inventory methodology). The production of each ecological range site condition class was established by averaging the production measured in the 1978 inventory for that site.

Average of condition class - Acres needed per AUM=AUMs

Appendix J summarizes the current acreage per condition class of each ecological range site in each allotment. It also summarizes the projected ecological range condition acreage and forage production in 25 years as derived by the methods described above.

APPENDIX L

CURRENT AND PROJECTED AUM'S OF LIVESTOCK FORAGE

Allotment	Current Forage Production	PROJECTED FORAGE PRODUCTION (YEAR 2005)			
		Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Stock by Condition	Alternative 4 No Grazing
0001	29	29	29	29	29
0002	36	36	36	36	42
0003	243	243	243	287	306
0004	45	41	57	57	61
6007	1341	1341	1341	1609	1743
6008	405	429	462	462	470
6009	342	342	328	564	568
6012	392	392	392	392	392
6013	48	48	48	48	48
6014 4/	407	423	1186	1309	696
6015	28	29	29	27	38
6016	13	13	13	13	13
6018	321	324	324	443	562
6019	331	348	340	374	401
6020	43	52	52	57	64
6021	125	124	124	126	130
6022	253	326	364	526	526
6023	47	47	47	54	64
6024	2004	2004	2525	2525	2525
6025	892	892	1320	1748	1748
6026	50	48	48	50	50
6027 1/	1736	2222	2835	2956	2743
6028	24	44	44	44	44
6030	399	399	435	435	515
6031	58	58	58	58	58
6032	135	162	212	212	200
6033	159	189	161	161	164
6034 2/	832	957	1269	1269	1023
6036	98	268	268	268	268
6037	93	92	97	97	99
6038	800	800	912	912	1032
6040	56	60	57	50	50
6041	257	254	324	388	457
6042	276	276	475	475	475
6043	455	455	432	573	573
6044	11	11	11	13	20
6045	32	32	32	40	56
6046 3/	1109	1109	1727	2027	1697
6047	279	279	315	315	349
6048	8	8	8	8	8
6049	231	231	231	238	249
6050	179	179	179	213	245
6051	69	86	86	86	69
6053	182	162	260	220	220
6055	3517	2708	2567	3060	3130
6079	136	136	136	136	136

CURRENT AND PROJECTED AUM'S OF LIVESTOCK FORAGE

Allotment	Current Forage Production	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Stock by Condition	Alternative 4 No Grazing
6055	3517	2708	2567	3060	3130
6079	136	136	136	136	136
6080	142	142	146	146	146
6081	40	38	40	80	80
6082	183	196	199	205	201
TOTAL	18891	19054	22832	25421	24783

1/ Chemical brush control and reseeding on 3760 acres would add 526 AUM's under Alternatives 2 and 3.

2/ Chemical brush control and reseeding on 3600 acres would add 504 AUM's under Alternatives 2 and 3.

3/ Prescribed burns on 7000 acres would add 330 AUM's under Alternatives 2 and 3.

4/ Prescribed burns on 11,000 acres would add 519 AUM's under Alternatives 2 and 3.

GLOSSARY

GLOSSARY

ABBREVIATIONS

The following abbreviations are used frequently in this statement:

AMP	Allotment Management Plan
AUM	Animal Unit Month
BLM	Bureau of Land Management
CNPS	California Native Plant Society
EA	Environmental Analysis
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act of 1976
FWS	U.S. Fish and Wildlife Service
IMP	Interim Managment Policy and Guidelines for Lands under Wilderness Review (1979)
LADWP	Los Angeles Department of Water and Power
PLIA	Public Lands Improvement Act of 1978
USGS	United States Geological Survey
WSA	Wilderness Study Area
VRM	Visual Resource Management

TERMS

ACRE FOOT. A volume that will cover an area of 1 acre to a depth of 1 foot (43,560 cubic feet).

ALLOTMENT. An area of land where one or more operators graze their livestock. It generally consists of public lands but may include parcels of private or State-owned lands. The number of livestock and season of use are stipulated for each allotment. An allotment may consist of one or several pastures.

ALLOTMENT MANAGEMENT PLAN (AMP). A livestock grazing management plan dealing with a specific unit of rangeland, based on multiple-use resource management objectives. The AMP considers livestock grazing in relation to other uses of the range and in relation to renewable resources-watershed, vegetation, and wildlife. An AMP establishes the seasons of use, the number of livestock to be permitted on the range, and the range improvements needed.

ALLUVIAL FAN. A deposit made by a stream where it runs out onto a level plan or meets a slower stream.

ANIMAL UNIT MONTH (AUM). The amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month.

ANNUAL DEPENDENCY. The percentage of an operator's annual forage requirements met by BLM forage in the EIS area.

ANNUAL PLANT. A plant that completes its life cycle and dies in 1 year or less (Range Term Glossary Committee, 1974).

AQUIFER. A water bearing rock, rock formation, or group of formations.

CLASS III INVENTORY (ARCHAEOLOGICAL). An intensive field inventory designed to locate and record, from surface and exposed profile, all cultural sites within a specified area.

CLIMAX. The highest ecological development of a plant community capable of perpetuation under the prevailing climate and soil conditions.

COLOR (VRM). A phenomenon of light or visual perception that enables one to distinguish between otherwise identical objects - a hue as contrasted to black, white, or gray.

CRUCIAL (CRITICAL) WILDLIFE HABITAT. That part of the habitat of a wildlife species that is essential to the survival and perpetuation of the species, either as individuals or as a population.

DEFERRED ROTATION GRAZING. Moving grazing animals to various parts of a range in succeeding years or seasons to provide for seed production, plant vigor, and seedling growth.

DEPOSITIONAL MATRICES. The body of deposited material within which cultural remains are found. The matrix (usually soil) is itself important, revealing information on flora, fauna and environmental characteristics useful in analysis and interpretation.

DISCHARGE. The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second, million gallons per minute, or cubic meters per second (Soil Conservation Society of America, 1970).

DOMINANT SPECIES. A plant species that dominates the general view of an area or appears to be the dominant species in an area and thus determines the vegetation subtype into which an area is classed.

ECOLOGICAL RANGE CONDITION. The present state of vegetation of an ecological range site in relation to the climax (natural potential) plant community for that site.

ECOLOGICAL RANGE SITE. A distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community.

ECOLOGY. The science of the relationships between organisms and their environments.

ECOSYSTEM. A complex self-sustaining natural system that includes living and nonliving components of the environment and the interactions that bind them together. Its functioning involves the circulation of matter and energy between organisms and their environment.

EDGE SPECIES. Wildlife species resident to, or with a preference for, those vegetational zones where two or more habitats meet.

ENDANGERED SPECIES. Any species in danger of extinction throughout all or a significant portion of its range. This definition excludes species of insects that the Secretary of Interior determines to be pests and whose protection under the Endangered Species Act of 1973 would present an overwhelming and overriding risk to man.

ENVIRONMENT. The surrounding conditions, influences, or forces that affect or modify an organism or an ecological community and ultimately determine its form and survival.

ENVIRONMENTAL ANALYSIS. The procedure for conducting environmental assessments (the systematic process of considering environmental factors in land management actions).

EROSION. The wearing away of the land surface by wind, water, and other geological agents.

EXCLOSURE. A small area set aside and protected from grazing either to preserve representative areas in excellent range condition or to allow observation of succession on depleted rangeland without grazing (Rangeland Reference Area Committee, 1975).

FAMILY LIVESTOCK OPERATION. An operation owned by adult members of a family (often maintaining separate households) who share expenses and responsibilities but have not legally incorporated. Family operations that incorporate are considered corporation owned rather than family owned.

FOOD WEB. The total complex pattern of feeding relations of an independent, self-maintaining, major biotic community.

FORAGE. All browse and herbaceous foods available to grazing animals, which may be grazed or harvested for feeding; the act of consuming forage (Range Term Glossary Committee, 1974).

FORAGE ACRE FACTOR. The percent of the site write-up area that is covered with consumable forage.

FORB. A herbaceous plant that is not a grass, sedge, or rush (Soil Conservation Society of America, 1970).

FORM (VRM). The mass of an object.

GRANITIC. A very hard igneous rock of crystalline texture formed essentially of quartz and orthoclase or microcline.

GROUND WATER BASIN. Subsurface drainage or catchment area; an area into which adjacent land drains and having no surface outlet.

HABITAT. A specific set of physical conditions that surround a single species, a group of species, or a large community. In wildlife management the major components of habitat are considered to be food, water, cover, and living space.

HABITAT MANAGEMENT PLAN (HMP). A written and officially approved plan for a specific geographical area of public land that identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives, and outlines procedures for evaluating accomplishments.

HEDGING. The persistent browsing of terminal buds of browse species causing excessive lateral branching and a reduction in upward growth (Range Term Glossary Committee, 1974).

HERBACEOUS. Pertaining to plants having little or no woody tissue.

HIGH SEASONAL DEPENDENCY. Obtaining more than 50 percent of one's seasonal forage supply from or having more than 50 percent of one's livestock on BLM allotment at a particular season of the year.

INTENSIVE LIVESTOCK GRAZING MANAGEMENT. A livestock management program that is based on the multiple-use resource management concept and that implements a specified grazing system formulated in an allotment management plan.

INTERMITTENT STREAMS. Streams flowing during rainstorms or peak snowmelt, with poorly defined channels, and flowing usually less than 10 percent of the year.

INTRUSION (VISUAL RESOURCES). A feature (land, vegetation, or structure) that is generally considered out of context with the characteristic landscape.

KEY SPECIES. A plant that is relatively or potentially abundant, that is able to endure moderately close grazing, and that serves as an indicator of changes occurring in a vegetational complex. The key species is an important vegetation component, which if overused, will significantly affect watershed conditions, grazing capacity, or other resources. More than one key species may be selected on an allotment. One species may be important for watershed protection and a different species important for livestock or wildlife forage or other values.

LESS INTENSIVE MANAGEMENT. A limited form of range management employed when the percentage of public land is small; when public land is scheduled to be transferred from public ownership; or when other conditions are not conducive to intensive management. Under less intensive management, an allottee is not required to follow a specified grazing system, but BLM specifies livestock numbers, class of animal, and grazing season.

LINE (VRM). Lines in the natural landscape are usually the result of an abrupt contrast in form, texture, or color.

LITHIC. A stone or rock that may be either abraded into the proper form for use as a tool or shaped by knocking pieces off.

LITTER. A surface layer of loose organic debris, consisting of freshly fallen or slightly decomposed organic materials (Soil Conservation Society of America, 1970).

LIVESTOCK CARRYING CAPACITY (GRAZING CAPACITY). The maximum stocking rate possible without damage to vegetation or related resources. It may vary from year to year in the same area because of fluctuating forage production (Range Terms Glossary Committee, 1974).

LIVESTOCK OPERATOR. In this EIS, an individual, family, corporation, or other entity that runs a livestock operation. An operator may have a single allotment, more than one allotment, or a portion of an allotment.

MANAGEMENT FRAMEWORK PLAN (MFP). A land use plan for public lands that provides a set of goals, objectives, and constraints for a specific planning area to guide the development of detailed plans for the management of each resource.

METAMORPHIC. Rocks formed in the solid state in response to changes in temperature, pressure, or chemical environment.

MORAINE. An accumulation of earth and stones deposited by a glacier.

NATIONAL RECREATION LANDS. A tract of land where recreation is or is expected to be a major use.

NATIONAL REGISTER OF HISTORIC PLACES. A register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior.

NATURAL AREA. Lands managed for retention of their typical or unusual plant or animal types, associations, or other biotic phenomena; or their outstanding scenic, geologic, pedologic, or aquatic features or processes.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow ice, marsh, swampland or other natural terrain, excluding (a) any registered motorboat, (b) any fire, military, emergency, or law enforcement vehicle when used for emergencies and any combat or combat support vehicle when used for national defense, and (c) any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license, or contract.

PALEOECOLOGICAL. Pertaining to ancient ecological systems.

PERENNIAL PLANT. A plant that has a life cycle of 3 or more years (Range Term Glossary Committee, 1974).

PHENOLOGY (PHENOLOGIES). The study of periodic biological phenomena, such as flowering or seeding, especially as related to climate (Range Term Glossary Committee, 1974).

PHYSIOGRAPHY. Geography dealing with physical features of the earth.

PREFERENCE. Original use level which was adjudicated to a grazing applicant based on the estimated carrying capacity. For the most part, the EIS is referring to active preference which is the maximum level to which a grazing operator can activate his use, which in some cases may be lower than his total preference.

PRESCRIBED BURNING. The intentional burning of the wildland fuels of a predetermined area under proper weather, fuel moisture, and soil moisture conditions to achieve planned benefits with minimum damanage at acceptable costs.

PROPER USE FACTOR (PUF). A degree and time of use of current year's growth, which, if continued, will either maintain or improve the range condition consistent with conservation of natural resources.

PUBLIC LAND. Federal lands administered by the Bureau of Land Management.

RANGE IMPROVEMENT. A structure, development, or treatment used in concert with management to rehabilitate, protect, and improve public land and its resources; to arrest range deterioration; and to improve forage condition, fish and wildlife habitat, watershed protection, and livestock production, all consistent with land use plans.

RANGE SITE. A distinctive kind of rangeland that differs from other kinds in its ability to produce a characteristic natural plant community.

RANGE TREND. A change in vegetation and soil characteristics resulting directly from environmental factors, primarily climate and grazing.

RECHARGE. The process by which water is absorbed and added to the zone of saturation; the quantity of water added to the zone of saturation.

REST-ROTATION GRAZING. A system in which one part of the range is ungrazed for an entire grazing year or longer, while other parts are grazed for a portion or all of a growing season.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to the plants of all types that grow along streams or around springs.

SALVAGE (ARCHAEOLOGICAL). Emergency recovery of cultural or paleontological data to prevent their loss from human or natural disturbance. Recovery techniques usually include partial or complete excavation.

SEASONAL DEPENDENCY. See HIGH SEASONAL DEPENDENCY.

SEDIMENTARY. Rock made up of particles deposited by wind, water, or ice.

SEDIMENT LOSS. Solid material (sediment) transported out of a watershed by wind or water.

SEDIMENT YIELD. The volume of soil moved from its point of origin to another point on the earth's surface.

SERAL STAGE. A development, transitory vegetation community; one of the successional stages developed on an area prior to the climax community.

SITE (ARCHAEOLOGICAL). Sites consist of any combination of artifacts (objects showing human usage or manipulation) and features (such as structures, fire pits, or rock art panels).

SITE WRITE-UP AREA. An area delineated or mapped based on condition class and or present vegetation. A site write-up area may consist of an entire range site if it is all in one condition class and or present vegetation community.

SOIL ASSOCIATION. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

STOCK DRIVEWAY. A strip of land specifically designated for the controlled movement of livestock (Range Term Glossary Committee, 1974).

STOCKING RATE (LEVEL). Number of grazing animals on a given area of land at any time. The stocking rate may be above, below, or equal to the proper carrying capacity and may be expressed as AUMs per acre or acres per AUM.

SUBSTANTIALLY AFFECTED. Usually refers to a livestock operator who would lose 10 or more percent of his annual forage supply under a particular alternative.

SUCCESSION. An orderly process of biotic community development that involves changes in species, structure, and community processes with time. It is reasonably directional and therefore predictable.

TEXTURE (VRM). The result of size, shape, and placement of parts, their uniformity, and the distance from which they are being viewed.

THEMATIC (ARCHAEOLOGICAL). A data set related to a single person, group, site, developmental process, etc.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.

UNGULATES. Hoofed mammals, most of which are herbivorous and many of which have horns.

UNIT RESOURCE ANALYSIS (URA). The system of data gathering and analysis that precedes land use planning for public lands.

USE (GRAZING). The consumption and destruction of forage by grazing animals or the amount of forage so consumed and destroyed. Use is usually expressed in animal unit months (AUMs).

UTILIZATION (FORAGE). The proportion of current year's forage consumed or destroyed by grazing animals. Utilization is usually expressed as a percentage.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES. Classification of landscapes according to the kinds of structures and changes that are acceptable to meet established visual goals.

WATER TABLE. The upper limit of the part of the soil or underlying rock material that is wholly saturated with water. In some places an upper or perched water table may be separated from a lower one by a dry zone.

WILDERNESS. An uncultivated, uninhabited, and usually roadless area set aside for preservation of natural conditions. According to Section 2(c) of the Wilderness Act of 1964,

> "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visistor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

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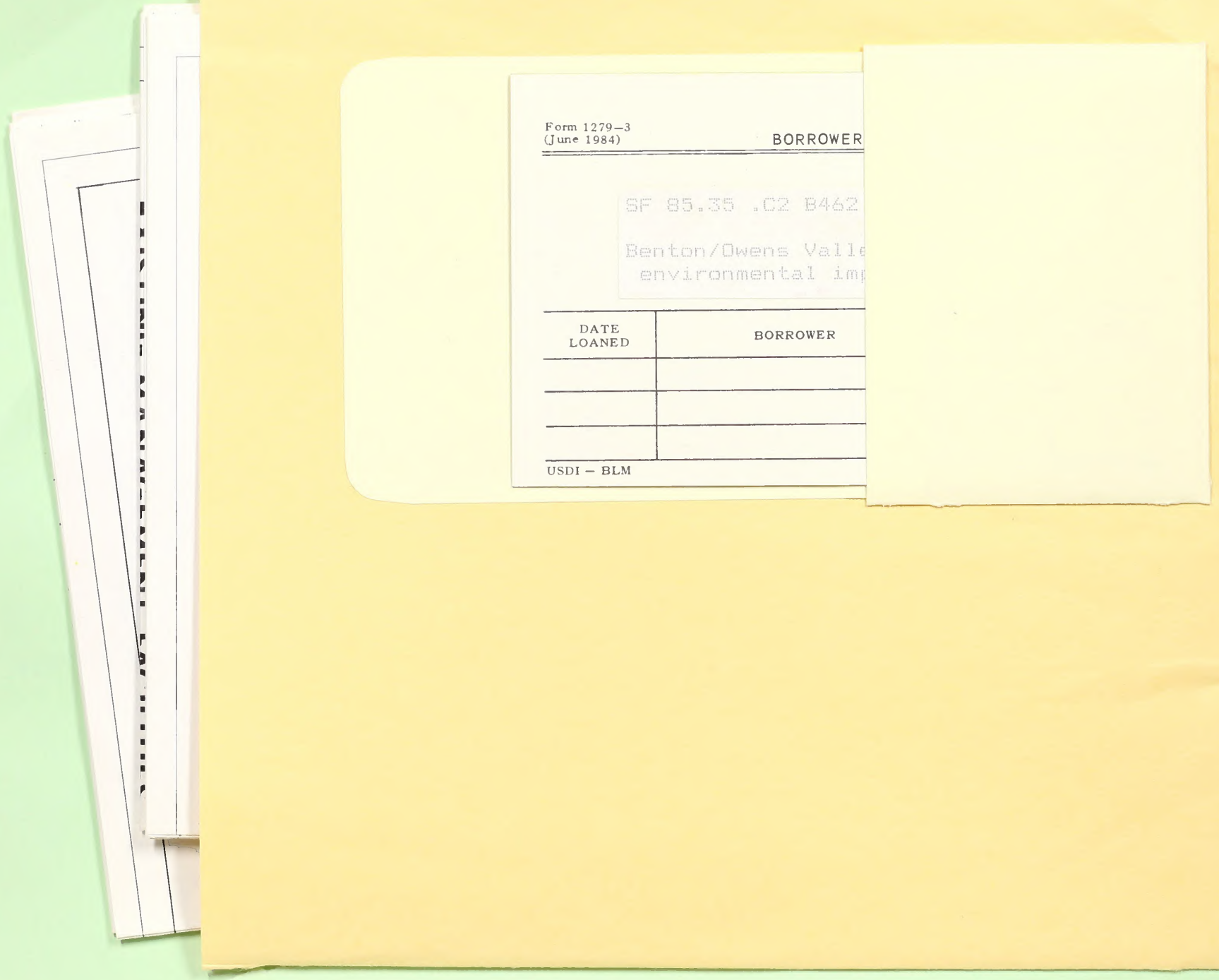

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(June 1984)

BORROWER

DATE LOANED	BORROWER

USDI – BLM

BENTON - OWENS VALLEY GRAZING ENVIRONMENTAL IMPACT STATEMENT PROPOSED AND EXISTING GRAZING MANAGEMENT MAP 1

MONO LAKE

NATIONAL FOREST

INYO NATIONAL FOREST

6054
6055
6065
6034
6035
6036
6027 RR
6037
6026
6038
6028
6025 RR
6024
6053
6041
6007
6030
6004
6043
6040
6055
6009
6017
6018
6022
6044
6081
6045
6020
6041

Old Camp (S)
West Portal (S)
Alger Lake (S)
June Lake (S)
Sand Flat S
Dexter Creek S
Black Canyon (C)
Long Valley (C)
Turner (C)
Waterson Meadow (C)
Clover Patch (C)
Antelope (C)
Chidago (C)
(C) Hot Creek
Casa Diablo (S)
Owens River (S)

CA 010 0918
CA 010 090
CA 010 088
CA 010 087
CA 010 077
CA 010 075
CA 010 079
CA 010 072
CA 010 070
CA 010 084
CA 010 082
CA 010 080
CA 010 083
CA 010 081
CA 010 065

VOLCANIC TABLELAND

ROUND VALLEY

Owens River

Chalfant Valley

Waterson Ridge

T 2 N.
T 1 N.
T 1 S.
T 2 S.
T 3 S.
T 4 S.
T 5 S.
T 6 S.

R. 25 E. R. 26 E. R. 27 E. R. 28 E. R. 29 E. R. 30 E. R. 31 E. R. 32 E. R. 33 E. R. 34 E.

EXISTING MANAGEMENT FACILITIES

- ALLOTMENT BOUNDARY
- USFS ALLOTMENT BOUNDARY
- SPRING
- DEVELOPED SPRING
- TROUGH
- PIPELINE
- CATTLE GUARD
- FENCE
- CORRAL
- WINDMILL
- SHEEP TRAIL
- CATTLE — C
- SHEEP — S
- LANDS UNDER INTERIM MGM'T POLICY & WILDERNESS REVIEW — CA 010 088

PROPOSED MANAGEMENT FACILITIES

- ALLOTMENT BOUNDARY
- PROPOSED FENCE
- REMOVE FENCE
- WATER SITE
- PIPELINE LOCATION
- REMOVE PIPELINE
- REMOVE CORRAL
- REMOVE STUDY EXCLOSURES
- WILDLIFE EXCLOSURES — W
- REMOVE WATER SITE
- AERIAL SEEDING — Aerial Seeding
- CHEMICAL SPRAYED AREA — Herbicide
- PRESCRIBED BURN AREA — Prescribed Burn
- REST ROTATION GRAZING SYSTEM — RR
- DEFERRED ROTATION GRAZING SYSTEM — DR

KILOMETERS
MILES

ELEVATIONS IN METERS
To convert meters to feet multiply by 3.28
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND

- Perennial stream, lake
- Intermittent stream, lake
- Village or locality
- Landmark structure

ROAD CLASSIFICATION

- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Trail
- Interstate route
- U.S. route
- State route

BENTON - OWENS VALLEY GRAZING ENVIRONMENTAL IMPACT STATEMENT PROPOSED AND EXISTING GRAZING MANAGEMENT MAP 1

Owens River
Rock Creek
6032 RR
6051
6051 RR
6008 DR
6008 RR
Tungsten Hills
Bishop
Unalloted
6019
Buttermilk (c)
Bishop Creek (c)
Peterson Mill (c)
0001
Shannon Creek (c)
6021
Baker Creek (c)
6079
6019
Murray Meadow (c)
Taboose (c)
6047
6050
6049
6049
Unalloted
0002
6023
6023
6015
6016
6031
6013
6012
6033
6033
6023
6023
6023
6015
6048
Mazourka (c)
Independence
Independence (c)
6014
George Creek (c)
6046 DR
Southern Inyo Mountain Unalloted Area
Alabama Hills (c)
6042 RR
Ash Creek (c)
6042 RR
5012
Olancha 5011

T. 5 S. T. 6 S. T. 7 S. T. 8 S. T. 9 S. T. 10 S. T. 11 S. T. 12 S. T. 12 S. T. 13 S. T. 14 S. T. 15 S. T. 16 S. T. 17 S. T. 18 S. T. 19 S.

R. 33 E. R. 34 E. R. 35 E. R. 36 E. R. 37 E.

CA 010 059 CA 010 060 CA 010 063 CA 010 064 CA 010 065 CA 010 066 CA 010 069 CA 010 057 CA 010 058 CA 010 055

EXISTING MANAGEMENT FACILITIES

- ALLOTMENT BOUNDARY
- USFS ALLOTMENT BOUNDARY
- SPRING
- DEVELOPED SPRING
- TROUGH
- PIPELINE
- CATTLE GUARD
- FENCE
- CORRAL
- WINDMILL
- SHEEP TRAIL
- CATTLE — C
- SHEEP — S
- USFS UNSUITABLE — U
- LANDS UNDER INTERIM MGM'T POLICY & WILDERNESS REVIEW — CA 010 058

PROPOSED MANAGEMENT FACILITIES

- ALLOTMENT BOUNDARY
- PROPOSED FENCE
- REMOVE FENCE
- WATER SITE
- PIPELINE LOCATION
- REMOVE PIPELINE
- REMOVE CORRAL
- REMOVE STUDY EXCLOSURES
- WILDLIFE EXCLOSURES
- REMOVE WATER SITE
- ROAD CLOSED
- PRESCRIBED BURNING
- REST ROTATION GRAZING SYSTEM — RR
- DEFERRED ROTATION GRAZING SYSTEM — DR

SCALE 1:100 000

ELEVATIONS IN METERS
To convert meters to feet multiply by 3.28
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND
- Perennial stream, lake
- Intermittent stream, lake
- Village or locality
- Landmark structure
- PUBLIC LAND

ROAD CLASSIFICATION
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Trail
- Interstate route
- U.S. route
- State route

BENTON - OWENS VALLEY GRAZING ENVIRONMENTAL IMPACT STATEMENT SOIL AND VEGETATION ASSOCIATIONS MAP 2

SOIL ASSOCIATIONS*

Soils of the Saline-Alkali Valley Floors

1A Ployo-Aquic Udorthents-Xerofluvents Association:
Very deep, nearly level to gently sloping, poorly to somewhat excessively drained ashy loamy sands, sandy loams, and silt loams on basin floors and lake shorelines; calcareous; many saline-alkali.

1B Gilo-Vinton-Ployo Association:
Very deep, nearly level to gently sloping, poorly to somewhat excessively drained sands and sandy loams on basin floors, lake shorelines, and alluvial fans; calcareous; many saline-alkali.

Soils of the Mountainous Regions

2A Torriorthent-Haplorgids-Rock Outcrop Association:
Mostly shallow, moderately sloping to very steep, well drained loamy sands, sandy loams, and silt loams on hills and lower mountain slopes; many gravelly, cobbly, stony, or rocky; many calcareous; some deep soils.

2B Torriorthents-Haplargids-Schowono Association:
Shallow to very deep, gently sloping to very steep, well drained loamy sands, sandy loams, and loams on higher mountain slopes; gravelly, cobbly, stony, or rocky; many calcareous.

2C Zono-Cowhack Association:
Moderately deep and deep, gently sloping to steep, somewhat excessively drained ashy sands and loamy sands on higher mountain slopes.

2D Orthents-Xerolls-Rock Outcrop Association:
Shallow and moderately deep, moderately sloping to very steep, well drained loamy sands, sandy loams, and silt loams on upper mountain slopes and crests; some calcareous; many gravelly, cobbly, stony, or rocky.

Soils of the Volcanic Tablelands and Old Terraces

3A Honovo-Chidago-Hommil Association:
Very shallow to very deep, nearly level to strongly sloping, well to somewhat excessively drained ashy loamy sands on volcanic tablelands; some calcareous; shallow soils are cobbly, stony, or rocky.

3B Sherwin-Komu Association:
Mostly shallow, nearly level to moderately sloping, well to somewhat excessively drained ashy loamy sands on volcanic tablelands and lithified lake terraces; many cobbly, stony, or rocky.

Soils of the Intermountain Valleys

4A Onom-Dystric Xerorthents Association:
Very deep, nearly level to strongly sloping, somewhat excessively to excessively drained ashy sands and loamy sands on lake terraces and valley floors; some substratum are extremely cindery.

4B Ebodo-Sowavu-Bentonhot Association:
Moderately deep to very deep, nearly level to strongly sloping, well to somewhat excessively drained ashy loamy sands on alluvial fans and valley floors; many duripans present.

Soils of the Stony Alluvial Fans

5A Yermo-Durorthids-Cojon Association:
Very deep, nearly level to steep, well drained loamy sands, sandy loams, and silt loams on alluvial fans and old terrace remnants; many calcareous; gravelly, cobbly, or stony; shallow duripans present on terrace remnants.

5B Xeric Torriorthents-Xeric Haplargids-Dunmovin Association:
Mostly very deep, gently sloping to steep, well to somewhat excessively drained sands, loamy sands, and sandy loams on alluvial fans and old terrace remnants, many cobbly or stony; duripans and clayey subsoils on terrace remnants.

5C Seorles-Beverly-Toll Association:
Very deep, gently sloping to steep, well to somewhat excessively drained sands, loamy sands, and sandy loams on alluvial fans and glacial moraines; many cobbly and stony.

Soils of the Lava Flows

6A Toboose-Chelon-Krentz Association:
Very deep, moderately sloping to very steep, well to somewhat excessively drained cinder loamy sands and sandy loams on basaltic lava flows and cinder cones; some calcareous; cobbly, stony, and rocky.

*Textures in names of associations refer to the surface layer of the major soils.

Note - Areas delineated on this map represent broad soil groupings. They are intended for orientation and general planning only.

VEGETATION MAJOR HABITAT TYPES

- GREAT BASIN BIG SAGEBRUSH-BITTERBRUSH
- GREAT BASIN BIG SAGEBRUSH
- MIXED DESERT SHRUB
- BLACKBRUSH SCRUB
- ALKALI MEADDW
- SHADSCALE SCRUB
- NEVADAN PINYDN-JUNIPER WDDDLANDS
- JEFFERY PINE FDREST
- NDRTHERN JUNIPER WDDDLANDS
- PREVIOUSLY TREATED AREAS

ELEVATIONS IN METERS
To convert meters to feet multiply by 3.28
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND
- Perennial stream, lake
- Intermittent stream, lake
- Village or locality
- Landmark structure
- Public Lands

ROAD CLASSIFICATION
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Trail
- Interstate route
- U.S. route
- State route

MONO LAKE
NATIONAL FOREST
VOLCANIC TABLELAND
ROUND VALLEY
INYO
MONO CO
CALIFORNIA
NEVADA

R. 25 E. R. 26 E. R. 27 E. R. 28 E. R. 29 E. R. 30 E. R. 31 E. R. 32 E. R. 33 E. R. 34 E.
T. 2 N. T. 1 N. T. 1 S. T. 2 S. T. 3 S. T. 4 S. T. 5 S. T. 6 S.

BENTON - OWENS VALLEY GRAZING ENVIRONMENTAL IMPACT STATEMENT SOIL AND VEGETATION ASSOCIATIONS MAP 2

VEGETATION MAJOR HABITAT TYPES

- GREAT BASIN SUBALPINE FOREST
- GREAT BASIN SUBALPINE SAGEBRUSH
- NEVADAN PINYON - JUNIPER WOODLAND
- SHADSCALE SCRUB
- GREAT BASIN SALTBUSH SCRUB
- BLACKBRUSH SHRUB
- MIXED DESERT SHRUB
- GREAT BASIN BIG SAGEBRUSH-BITTERBRUSH
- ALKALI SINK SCRUB
- MOJAVE CREOSOTE BUSH SCRUB
- GREAT BASIN BIG SAGEBRUSH
- PREVIOUSLY TREATED AREA (Burn and Spray Treatments)

SOIL ASSOCIATIONS*

Soils of the Soline-Alkali Valley Floors

1A Playa-Aquic Udorthents-Xerofluvents Association:

Very deep, nearly level to gently sloping, poorly to somewhat excessively drained ashy loamy sands, sandy loams, and silt loams on basin floors and lake shorelines; calcareous; many saline-alkali.

1B Gila-Vinton-Playa Association:

Very deep, nearly level to gently sloping, poorly to somewhat excessively drained sands and sandy loams on basin floors, lake shorelines, and alluvial fans; calcareous; many saline-alkali.

Soils of the Mountainous Regions

2A Torriorthent-Haplargids-Rock Outcrop Association:

Mostly shallow, moderately sloping to very steep, well drained loamy sands, sandy loams, and silt loams on hills and lower mountain slopes; many gravelly, cobbly, stony, or rocky; many calcareous; some deep soils.

2B Torriorthents-Haplargids-Schawana Association:

Shallow to very deep, gently sloping to very steep, well drained loamy sands, sandy loams, and loams on higher mountain slopes; gravelly, cobbly, stony, or rocky; many calcareous.

2C Zono-Cowrock Association:

Moderately deep and deep, gently sloping to steep, somewhat excessively drained ashy sands and loamy sands on higher mountain slopes.

2D Orthents-Xerolls-Rock Outcrop Association:

Shallow and moderately deep, moderately sloping to very steep, well drained loamy sands, sandy loams, and silt loams on upper mountain slopes and crests; some calcareous; many gravelly, cobbly, stony, or rocky.

Soils of the Volcanic Tablelands and Old Terraces

3A Honova-Chidago-Hamout Association:

Very shallow to very deep, nearly level to strongly sloping, well to somewhat excessively drained ashy loamy sands on volcanic tablelands; some calcareous; shallow soils are cobbly, stony, or rocky.

3B Sherwin-Kamu Association:

Mostly shallow, nearly level to moderately sloping, well to somewhat excessively drained ashy loamy sands on volcanic tablelands and lithified lake terraces; many cobbly, stony, or rocky.

Soils of the Intermountain Valleys

4A Onom-Dystric Xerorthents Association:

Very deep, nearly level to strongly sloping, somewhat excessively to excessively drained ashy sands and loamy sands on lake terraces and valley floors; some substratum are extremely cindery.

4B Ebade-Sowavu-Bentonhot Association:

Moderately deep to very deep, nearly level to strongly sloping, well to somewhat excessively drained ashy loamy sands on alluvial fans and valley floors; many hardpans present.

Soils of the Stony Alluvial Fans

5A Yermo-Durorthids-Cajon Association:

Very deep, nearly level to steep, well drained loamy sands, sandy loams, and silt loams on alluvial fans and old terrace remnants; many calcareous; gravelly, cobbly, or stony; shallow duripans present on terrace remnants.

5B Xeric Torriorthents-Xeric Haplargids-Dunnovin Association:

Mostly very deep, gently sloping to steep, well to somewhat excessively drained sands, loamy sands, and sandy loams on alluvial fans and old terrace remnants; many cobbly or stony; duripans and clayey subsoils on terrace remnants.

5C Searles-Beverly-Toll Association:

Very deep, gently sloping to steep, well to somewhat excessively drained sands, loamy sands, and sandy loams on alluvial fans and glacial moraines; many cobbly and stony.

Soils of the Lovo Flows

6A Taboose-Chelan-Krentz Association:

Very deep, moderately sloping to very steep, well to somewhat excessively drained cinder loamy sands and sandy loams on basaltic lava flows and cinder cones; some calcareous; cobbly, stony, and rocky.

*Textures in names of associations refer to the surface layer of the major soils.

Note – Areas delineated on this map represent broad soil groupings. They are intended for orientation and general planning only.

SCALE 1:100 000

ELEVATIONS IN METERS
To convert meters to feet multiply by 3.28
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LEGEND
- Perennial stream, lake
- Intermittent stream, lake
- Village or locality
- Landmark structure
- Public land

ROAD CLASSIFICATION
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Trail
- Interstate route
- U.S. route
- State route